LAST MINUTE
OIL NEWS SECTION

News By Teletype from 4 News Bureaus

National Petroleum News

News From Oil Industry Everywhere

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API Board Urges Separate Posting Of Price and Tax

COLORADO SPRINGS, June 5.—A resolution urging oil companies to state the price of gasoline and the tax it carries separately on every possible occasion, was adopted by the board of directors of the American Petroleum Institute, meeting here in connection with the semi-annual meeting of the institute.

"It is only fair to the gasoline consumer and to the industry itself that the exact price of gasoline should be posted at service stations, the taxes and tax rates imposed clearly indicated and the total cost of the commodity indicated," stated a memorandum issued by the board. "It would be of further benefit were this definite and unmistakable separation of prices, taxes and total costs practiced also in making out sales and delivery slips, accounts, bills, statements, etc."

In commenting on state laws in Connecticut, Massachusetts, Nebraska and New Jersey which prohibit separate posting of prices and taxes, the board stated that, in view of the recent widespread acceptance of the so-called Fair Trade Acts in many states, no state or public official could seriously object to the effort by the oil industry to create public understanding of actual price of its product.

Failure to inform the public as to the gasoline tax violates the spirit of the Fair Trades Act, it was pointed out, because it does not represent to the consumer the exact price of the commodity sold. In view of the acceptance of such acts in many states, onus would fall upon any who attempt to prevent the separate posting of the price and the tax, it was stated by the board.

Situation Acute

"The situation becomes more acute as tax rates are increased and as the public becomes price conscious because of the widespread publicity generally being given to recent rises in commodity prices," said the board's

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Findlay Celebration Will Open June 20

FINDLAY, O., June 7.—Findlay's Golden Celebration of Oil and Gas, set for June 20-26, commemorating this community's discovery of natural gas, is progressing at a rapid rate as the opening date draws near.

New developments include the scheduling of J. E. Moorhead, executive secretary of the Pennsylvania Grade Crude Oil Assn., as the principal speaker at the Old Timers' Banquet the evening of June 23.

The principal speaker at the dedication of the monument at the site of the Karg well, the largest of the gas wells drilled in the Findlay sector, will be C. I. Weaver, president of The Ohio Fuel Gas Co., and the principal speaker at the dedication of the Oesterlen well monument, the discovery well, will be Axtell J. Byles, president of the American Petroleum Institute. R. H. Gallagher of the Standard Oil Co. of New Jersey will also speak.

Confer On Extension Period Of Connally "Hot" Oil Law

N. P. N. News Bureau

WASHINGTON, June 7.—Whether the Connally "hot" oil law due to expire June 16, unless extended, will become a permanent statute of the U. S. or will be continued only two years, will be determined here within a few days by conferees from both houses of Congress.

Conferees were named today after the Senate, on motion of Senator Tom Connally, Texas, voted not to accept the amendment added by the House, which limited the extension of the act to June 30, 1939. Previously, the Senate had passed Connally's bill to make the "hot" oil law permanent and the House, acting on recommendations of its Interstate Commerce Committee, passed the bill with the two-year limitation.

Senate conferees include Senators Connally, Augustine Lonergan, Connecticut, and J. G. Townsend, Jr., Delaware, all members of the subcommittee which held hearings on the bill. The Cole subcommittee membership was named to represent the House at the conference. Its members are Congressmen W. P. Cole, Maryland; Samuel B. Pettengill, Indiana; E. A. Kelly, Illinois; Carl E. Mapes, Michigan, and C. A. Wolverton, New Jersey. It is a subcommittee of the Interstate Commerce Committee, which investigated the oil industry a few years ago.

Biermann Amendments

Two amendments were offered to the bill during its debate on the floor of the House last week, both by Congressman Fred Biermann, Iowa, who spoke at some length against continuation of the "hot" oil law, declaring that it is not a conservation measure and that it hurts the independent marketers.

One of Biermann's amendments, which was overrulled on a point of order, would have divorced the major oil companies from the marketing end of the business. Discussing it on the floor, and in response to a question by Congressman Martin Dies, Texas, author of the House bill, he said:

"I am talking about the fellows who run the filling stations, the little jobbers, the kind of people we have in Iowa. I have heard from scores and scores of them in Iowa who are being ground down by the law. It is not necessary. Your people can have the benefits of this law without hurting the rest of the independent marketers.

"My amendment proposes that you continue to make money on your producing and refining and on your pipe lines, but also to allow the independent marketers to make a little money."

Lose on Marketing

Biermann contended the Connally "hot" oil law enables integrated companies to sustain prices in the production, refining and transportation ends of the

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'Gas' Station in Interstate Trade? Maybe, If They Supply Buses

By Teletype
N. P. N. News Bureau

WASHINGTON, June 7. — Filling stations serving interstate buses and trucks would be covered by the Black-Connery bill authorizing a federal board to prescribe minimum wages and maximum hours for businesses affecting the flow of interstate commerce, according to Robert H. Jackson, assistant attorney general in charge of the Justice Department's anti-trust division.

However, Jackson believes that filling stations serving only private cars would be exempt from the proposed law.

He expressed this opinion while testifying on the Black-Connery bill, which embodies recommendations of President Roosevelt last week regarding wages and hours legislation.

Jackson's answer was in reply to a direct question by Congressman William P. Connery, Jr., Massachusetts, joint author of the bill, as to whether a filling station attendant would be considered working in interstate commerce so that his wages and hours could be regulated.

Jackson said that, if the man was an attendant at a filling station for a bus line operating in interstate commerce, he would be the same category as a railroad employe, but he said; "I think that a local gasoline filling station man who serves those who come from out of the state as well as those within the state, and whose service is wholly local, would not be an interstate commerce factor."

Jackson's rather novel view of the interstate character of a filling station was complicated by his later statement that local business would not be subject to federal regulation.

Hearings on the wage-hour bill are likely to continue all this week.

S. C. Marketers Ask Relief From New Profits Tax

CHARLESTON, S. C., June 5.—Relief from the burden of the tax on undistributed surplus, on behalf of the independent marketing companies in South Carolina, is being demanded of congressmen from that state, by the South Carolina Independent Oil Men's Association. The association some time ago adopted a resolution condemning the effect of the tax on the independent marketer's business and its members have since been writing their congressmen on the subject.

The resolution said that the undistributed surplus tax, a new feature of the last revenue act, has a damaging effect on smaller concerns which have not yet reached their natural limit of expansion, as contrasted with large companies which are not expanding and which had built up large surpluses before the tax became effective.

The resolution also said the tax weakened financially the local concerns, who might suffer seriously in a period of low markets in their territories, whereas the large companies, operating over a much wider territory, could better withstand such a period of low markets. The resolution stated that the tax in effect furnished a tool the big companies could use to absorb their smaller competitors, if they desired.

"During the years 1935 and 1936, it is my opinion that a number of independent oil companies made a fair profit in excess of their expenses and normal dividends, although they have not made profits in excess of the average business in other lines," stated T. Wilbur Thornhill, president of the Charleston Oil Co., of Charleston.

"It has been the policy of the companies, prior to the enactment of the tax on undistributed profits, to use most of their profits for expansion purposes and the balance was set aside as a reserve against unforeseen marketing conditions and periods of depression.

Expansion Handicapped

"Under the law, as I understand it, the independent oil companies will either have to pay the profits that come with good times to their stockholders or to employes or officers, or declare practically all the profits and dividends to avoid the tax. Then they will have the almost impossible task of trying to persuade the parties receiving the benefits to buy back into the company, in the amount that was given them. This is most necessary if the company expects to expand or protect itself during a rainy day."

The large oil companies, Thornhill went on to say, can issue bonds when they want money for expansion, which they have no difficulty in selling to the public. The small oil company, being local in its operations, is offered no real market for its bonds, he stated, although their bonds, in many cases, have a higher dollar value than the bonds of the integrated oil companies.

Text of Resolution

The text of the resolution of the South Carolina Independent Oil Men's Assn. condemning the tax on undistributed profits reads as follows:

"WHEREAS, it is the concensus of opinion of the members of the South Carolina Independent Oil Men's Assn. that the tax on undistributed profits retards progress; is unsound in principle, and is unjust and inequitable in its effect on the smaller concerns which have not reached the limit of expansion they hope to attain, in that said tax, among other things, by its very nature and effect:

"(a) Requires such concerns to declare their profits out in dividends, when sound business principles, and the condition of things, would demand that they be used for expansion purposes.

"(b) Requires such concerns to declare their profits out in dividends, and leaves such concerns in a weakened condition to weather the storm when the time comes, as it so often does, that they are operating at a loss due to marketing conditions, such as low markets in the immediate and limited area in which they operate; whereas, their competitors, many of whom operate on a national scope, have the benefit of high markets in other marketing areas to off-set their losses in the areas where the markets are low.

"(c) Requires such concerns to declare their profits out in dividends, leaving such concerns in a weakened condition, and at the mercy of the larger competitors who operate over a large territory, or on a national scope, when the markets are low or the marketing conditions bad in the vicinity where the smaller concerns operate, and thereby furnishes a tool for the larger competitors who would choose to use it, to absorb the smaller concerns during such period.

"(d) Retards, and in fact prevents, competition from becoming greater with the larger concerns already operating on a national scope, on account of the weakened condition of the smaller concerns, and on account of their being prevented from expanding as their larger competitors have expanded prior to the passing of the act placing a tax on undistributed profits.

"Therefore, be it resolved, that this, the South Carolina Independent Oil Men's Association, go on record as protesting any tax or undistributed profits; and as sponsoring the repeal of the existing tax on any undistributed profits."

Funds for Search for New Oil Are From Depletion Allowance

By Teletype
N. P. N. News Bureau

TULSA, June 8. — The more tax men study the criticisms expressed by Secretary of Treasury Morgenthau of the depletion allowance in the income tax law, which President Roosevelt embodied in his message to Congress June 1, the more apparent it is to them that the administration is proposing to return to the chaotic tax situation which led to enactment of the provision which has been in effect since 1926, with but slight modification in procedure.

The Revenue Act of 1918, as it is known, but which was not enacted until February, 1919, provided for depletion allowance on the basis of discovery value.

It was soon recognized by Congress, however, that some provision had to be made for the extractive industries. The oil producer must set aside something from the revenue from the oil he produces with which to find more oil. Otherwise he retires from the business when he has used up his reserves.

The same is true of other industries. Hence, there is provision in the revenue law now of five per cent depletion allowance for coal mines, 15 per cent for metal mines, 23 per cent for sulfur mines and 27.5 per cent for oil and gas. The last named is recognized as being more hazardous than other classes of mining and discovery costs more money.

New Method Needed

It was apparent by 1926 that the straight-out discovery depletion basis would not work. The income tax department had dozens of engineers trying to settle cases but it was virtually impossible to close one. Conditions change on a lease. It ceases producing at the rate set up on a decline curve basis, because of water encroachment or for any of several other reasons that affect oil properties and the whole matter has to be figured anew. Or a new sand may be found and calculation is out of line the other way. No case could ever be called closed until the property had been exhausted and abandoned and even today there are very few such properties.

What was needed was a method of saying that the return from each barrel of oil was part income and part return of capital. Treasury Department appraisal experts recognized this and contended for it. They helped write the depletion allowance section of the law, after numerous conferences and examination of the facts they had collected over the seven years of trying to handle oil tax cases on the discovery depletion basis.

27.5% Adopted

So the 27.5 per cent allowance was adopted. As an average for the industry it has worked out very close to the actual figures, it is said. The implication in the President's message was that every oil property is given a handsome bonus in the form of a tax exemption. That is not the fact. The depletion allowance is limited by the provision that such allowance of 27.5 per cent of gross income must not exceed 50 per cent of net income. Thus, a property might have a gross income of $100,000 but, due to high costs it might make a net of only $1, the allowance therefore would be 50 cents. This would be an extreme case but the limitation does apply to numerous properties every year in such form as to make allowance negligible in these cases.

Tax men consider it unthinkable that any government official will contend that no allowance is necessary for an industry that must constantly be seeking new reserves to meet the national needs. Oil finding becomes constantly more costly. Geophysical work alone is costing an estimated $20,000,000 yearly and the actual wildcatting is a burden far higher than it was in the days when a 3000-foot hole was considered deep.

Assuming that some allowance will be made, the only alternative would seem to be a return to the discovery depletion which years ago was pronounced too heavy a burden for the government to administer and so filled with errors that Treasury Department men themselves asked for change to the method that has operated satisfactorily for 10 years.

13 Orders Clear Court for Trial Of Madison Case

N. P. N. News Bureau

CLEVELAND, June 8.—Thirteen orders, handed down June 3 at Madison, Wis., by Federal Judge Patrick T. Stone of the United States District Court for Western Wisconsin, granted in part motions for bills of particulars filed by some of the oil companies and individuals charged with conspiracy in violation of the Sherman anti-trust laws.

The orders required government attorneys to answer by July 13 certain specific questions asked by the defendants, but in general, did not require the government to tell exact time, place nor substance of the alleged conspiracies, on the grounds that any such needed knowledge was available already to the defendants.

Motions for bills of particulars were filed by 21 companies, (corporate defendants) as a group and 47 individual defendants as a group.

Court's Comment

In his orders on these motions, Judge Stone prefaced his order with the statement that much of the information requested in the motion for a bill of particulars was to be found in the defendants' own records and that grand jury witnesses had been released from the oath of secrecy, which otherwise would have prevented them from revealing questions asked by the grand jury.

Defense attorneys said they had sought the particulars because they had hoped to save much unnecessary labor in preparing defense if the charges were more exact.

Under the order of the court pertaining to 21 corporate (company) defendants, the government is required to give further details as follows:

Questions To Be Answered

1. State whether the defendants entered into an agreement not to sell to jobbers except in accordance with the prevailing form of jobber contract. The court ruled however, that the government need not state the time and place of such alleged agreement.

2. State whether the defendants entered into an agreement to raise the general level of retail prices prevailing in the mid-western area, including the western district of Wisconsin, where the indictment was returned. Again exact time, place, and substance of an alleged agreement need not be specified by government attorneys.

3. State what basis of comparison was used when the indictment charged the defendants entered into a collusive buying program in the East Texas field, with resulting "increased" buying from independent refiners. Does the term "increase" refer to number, volume or value of sales?

4. Is it charged that the East Texas Refiners Marketing Ass'n. was the tool of the so-called buying program; and, if so, is it charged the association was formed for that purpose, or utilized after its formation to effect the buying program? Information as to the exact time and names of those involved was denied by the court.

5. State whether it is charged that any of the purchases said to have been made in the Mid-Continent field were spot transactions and the parties to each purchase and date thereof.

6. State whether the alleged buying conspiracy was executed by agreement among the corporate defendants and the trade journals (Chicago Journal of Commerce, NATIONAL PETROLEUM NEWS and *Oilgram*) and the time and place of the agreement. Information as to the substance of the alleged agreement and names of individual agents involved was denied.

Individual Defendants

In his decision on the motion for bill of particulars filed by 47 individuals, Judge Stone ordered the government to answer a series of questions largely identical with those to be answered by the corporate defendants. Questions about the alleged buying program refer more in particular to the Mid-Continent field, however, while the buying program questions of the companies referred to an alleged program in the East Texas field.

The orders were concluded with the reservation by the court that the government's proof would not be limited to the answers made in compliance with the orders.

Other 11 Orders

These two orders ruled on motions presented by most of the defendants, who had combined to present their bills of particulars. The other eleven orders signed by Judge Stone were rulings on motions filed by separate individuals or companies. Of these, pleas for dismissal of the indictment against the Tide Water Oil Co. and the Marathon Oil Co., on the ground that both corporations have been dissolved, were granted by the court, but similar pleas on behalf of the officers of these companies were denied.

Pleas for bill of particulars, except in so far as indirectly covered in grants on particulars in other pleas, were denied on behalf of NATIONAL PETROLEUM NEWS, Platt's *Oilgram*, and Warren C. Platt, editor and publisher.

Supplemental demands made by C. M. Boggs and A. V. Bourque of the Western Petroleum Refiners Ass'n.; the Gulf Refining Co. and the Shell Petroleum Corp. were granted.

Surety Bonds for Small Dealers May Be Cut

COLUMBUS, O., June 8.—Possibility of the reduction in the bond which Ohio licensed dealers are required to post to cover payment of gasoline and liquid fuel taxes was seen by the Ohio Petroleum Marketers Ass'n. as a result of its recent legislative activities.

One amendment to a recent bill which was signed by the governor and which becomes effective in August, provides that, where the liability of any licensed dealer in the state for the payment of taxes on gasoline and liquid fuel for an average three-month period aggregates less than $5000, the tax commission, in its discretion, may reduce the amount of the surety bond. The bond, however, must be for not less than the amount of the liability of such a dealer for an average three-month period.

Another amendment insures the collection of taxes on fuel which has been purchased by an agency of the federal government and then resold by such agencies to individuals for their personal use.

A third amendment gives the state tax commission more discretion in consideration of claims for refunds of the tax on products used for non-taxable purposes.

Asphalt Institute Plans Highway Clinic

NEW YORK, June 7. — "A clinic on all highway problems" is the way J. E. Pennybacker, managing director of The Asphalt Institute, describes the National Asphalt Conference for 1937, which will be held in Memphis, during the week of Dec. 6.

Among topics to be discussed will be most efficient methods of road building, soil stabilization, flood control, harbor protection, airport surfacing and building safety into and alongside highways.

Striking Drivers Stop Trucks on Road, Get Dues

By Teletype

OMAHA, Nebr., June 8.—Strike of International Brotherhood of Teamsters, Chauffeurs, Stablemen and Helpers, A. F. of L. affiliate, was hampering shipments of petroleum products in this area, oil company reports said today.

One large compounder reported he made no shipments from Omaha since June 4. Greatest tie up occurred in the movement of petroleum products into the farm area. Strike was called as result of disagreement over closed shop demands. Approximately 4000 to 5000 drivers are on strike, according to union estimates.

Striking truck drivers were also detaining some gasoline transports. Two drivers were stopped near Omaha by a road patrol of striking truckers. The two drivers, according to reports, were detained until they had paid $7 to become members of the International Brotherhood of Teamsters, Chauffeurs, Stablemen and Helpers.

Union members said they would ask for a 3c wage of a running mile.

U. S. Offers Old Ships Suitable as Tankers

By Teletype
N. P. N. News Bureau

WASHINGTON, June 8.—Six steel cargo ships of the U. S. Maritime Commission's laid-up fleet today were offered to American bidders for conversion into tankers.

They are the INVINCIBLE, now at New Orleans; the ANDREW JACKSON, at James River, Va., and the WILLIAM PENN, COURAGEOUS, DEFIANCE and TRIUMPH, all at Staten Island, N. Y. Dead weight tonnage of the ships ranges from 10,670 to 12,980 tons, and their aggregate dead weight tonnage is 69,079. All burn oil.

Bids are to be opened July 20. The commission said several oil firms have inquired about the vessels for conversion into tankers.

Jobber Remodels Station

FAIRBURY, Ill.—Van's Service Station, operated by Vam O. Wharton, local jobber, is being remodeled. The roof is being raised and there will be head room in the two-bay lubrication department for lifts. The pump island canopy also is being remodeled.

Mexican Strike Still On Despite Cardenas' Order

By Teletype
N. P. N. News Bureau

NEW YORK, June 8.—Mexican oil workers continued their general strike today, according to late reports from Mexico City. The strike continued in defiance of President Lazaro Cardenas of Mexico, who, according to a cable received by the State Department at Washington, announced that on June 7 "the strike will have ceased to exist in the petroleum fields and the dependencies."

The unions voted June 7 to ask the Mexican Labor Board to arbitrate differences with employers, which in ordinary routine of labor settlements meant they would return to work pending the outcome.

However, the workers asked that the pay raises which the oil companies had previously offered be put in effect and that the government be allowed to check oil company books to determine if more increases could be granted.

Oil companies reported that they had not agreed to the men returning to work on that basis.

No Explanation

According to the State Department at Washington, President Cardenas' ultimatum was not accompanied by any explanation of the method he would use in settling the conflict. Excelsior, a newspaper, said the Mexican Department of Labor immediately communicated the president's statement to the C.T.M., the national federation of industrial unions, with the request that the petroleum workers return to their jobs on June 7, and that the C.T.M. leaders "became active in organizing renewal of work and in canceling various projected meetings and demonstrations."

Labor and oil company sources also reported that they had no idea of what method of settlement has been decided on by President Cardenas.

Involved in the struggle, which has now paralyzed Mexico for 15 days and which has left many American tourists stranded, has been the question of whether the industrial unions are to dominate Mexican affairs, disturbing the delicate balance between the unions, the agrarians, and the army, none of which wishes to see the other in a commanding position, according to cable information from Mexico.

To Buy Refinery

By Teletype

WICHITA, Kans., June 8.—Negotiations are reported well under way for purchase by the Bay Petroleum Co., of Denver, Colo., of the Dickey Refining Co.'s 5000-barrel plant at McPherson, Kans. The Bay company at present is constructing a refinery at Denver and has a small skimming plant at Cheyenne. It is interested in retail distribution in western Kansas and Nebraska and eastern Colorado.

Rebates at Pump Illegal In Penn.

NEW YORK, June 6.—Starting July 1, the retail gasoline industry in Pennsylvania will operate under a new act which requires licensing of gasoline pumps and forbids selling at under posted prices. The new law, which passed the legislature as H. 2057, was signed by Governor Earle June 2. The Pennsylvania oil industry is also being studied by a five-man commission to determine whether the state shall attempt to secure other legislation regulating the industry.

The chief provisions of H. 2057 are: After July 1 no retailer can operate a liquid fuels pump or outlet unless a permit has been granted by the state Department of Revenue. A separate permit is required for each pump at the rate of $1 yearly. Where pumps are used for private dispensing purposes the fee is 50 cents.

The department may suspend or revoke any liquid fuels permit when it finds the holder has failed to comply with the act.

Each permit holder must display at all times the posted selling price of the liquid fuel and the act also states specifically that the product must not be sold at under the price posted.

A station is forbidden to give away anything of value or any service for which payment is ordinarily required, to any purchaser or prospective purchaser of liquid fuels.

The act also makes it unlawful to sell through a trade-marked outlet any fuel not made by the producer of the trade-marked product. It also makes it illegal to deliver any other fuel into such trade-marked tanks or outlets.

Where a product is sold without a brand name the act specifics that it must be designated on a sign, or poster as "unbranded." The penalty for violation of the act involves a maximum fine of $5000 and imprisonment for a one year term or both.

Stanolind Cuts Gasoline Prices

CHICAGO, June 8. — The Standard Oil Co. of Indiana announced today that, effective June 9, it will reduce tank wagon and dealer prices of all grades of motor gasolines one-half cent to one cent through the ten states comprising the company's marketing territory. "The reduction," the company announced, "is to meet competitive conditions." Last previous general change was a one-third-cent advance Feb. 17, 1937.

So-called normal prices for Red Crown (regular) and Ethyl (premium) gasolines to tank wagon accounts and to dealers will be reduced one-half cent in Indiana, Illinois, Wisconsin, Minnesota, Iowa, Missouri, Kansas, North and South Dakota, and upper Michigan. Normal tank wagon prices for Stanolind (third grade) will be reduced one-half cent through the same area. Normal third grade prices to dealers will be reduced one cent.

Prices in the lower peninsula of Michigan, except reduction of one-half cent on third grade prices to dealers, are not included in the June 9 reduction.

Where prices are already below normal by the amount of the contemplated reduction or more, no change will be made, it was announced.

Field Office Opened By Asphalt Inst.

N. P. N. News Bureau

DALLAS, Texas, June 7. — The election of five southwestern refining companies to membership and establishment of a field office at Dallas has been announced by The Asphalt Institute.

The five new member companies are Col-Tex Refining Co., Colorado, Texas, Magnolia Petroleum Co., Dallas, Cosden Oil Co., Fort Worth, Anderson-Prichard Oil Corp., Oklahoma City, and Cosco Refining Co., Wynnewood, Okla.

The field office will be in charge of D. D. Williamson, formerly chief of the Texas State Highway Laboratories, and earlier on the staff of the Pittsburgh Testing Laboratory as head of the plant and field inspection of asphalt in Florida and Texas. He joined the Texas Highway department in 1933.

The establishment of a field office to serve the southwestern states of Texas, Oklahoma and Arkansas follows the development of this market in the past two or three years and the trend among more refiners in the area to manufacture asphalt products. The fact was developed at the annual Road Oil Congress held in Tulsa last fall that in some of the southwestern states, uniform engineering and research activities in connection with the use of asphalt for road building had been woefully lacking. The institute's new field office is expected to correlate these activities as well as handle promotional work.

Would Kill Import Tax On State-Used Oil

N. P. N. News Bureau

WASHINGTON, June 7 — A bill which would have the effect of relieving states and political subdivisions from paying the import tax on foreign crude petroleum from which asphalt and road oil which they use on highways are manufactured, has been introduced by Congressman Millard F. Caldwell, Florida.

The measure (H. R. 7375) which has been referred to the Ways and Means Committee, would refund to the importer of crude "so much of the amount of the tax paid upon the importation of crude petroleum . . . as is attributable to that part of the imported crude petroleum which is used as material in the production of asphalt or road oils . . ."

Before receiving the refund, however, the importer must show that the asphalt or road oils have been delivered to a state or political subdivision for roads and that he has repaid, or agreed to repay, the refund to the state or political subdivision to which delivery was made.

Price Posting Bill Before Ill. House

N. P. N. News Bureau

CHICAGO, June 7.—The Illinois price posting bill (H.B. 925), sponsored by a group of Chicago retailers, passed its first hurdle in the state legislature when house committee last week reported it out with a "do pass" recommendation.

The bill stipulates the size of numerals anl also the number of price signs used to display gasoline prices. It prohibits the selling of motor fuel below cost. All concessions, rebates, the giving of premiums and games of chance in connection with the sale of gasoline would be outlawed.

Ellick Botts

WRITES A LETTER

Mr. Botts Has New Problem in Henry And Appeals Again to Labor Board

National Labor Relations Board,
Washington, D. C.
Dear Board:

You may remember that I wrote you a few weeks ago about my problem which concerned my pumper, named Henry. I asked you then to send a man down to conduct a plebiscite or to ballot Henry in some way, as I was afraid that he was a company union within the meaning of the Wagner act and that I was subject to the horrendous penalties therein recited.

Now, I received no reply to this letter and, in writing you again, I am at a loss to know just how to bring this to your attention. My experience has been that it is difficult to start an exchange of letters with a government department and almost impossible to stop one. Once the ice is broken and you get back a letter stating that, in the future, address communications under serial No. X-317,482,193-M3 or something like that, a dignified chumminess or jovial hauteur can be preserved indefinitely. But you didn't answer and give me a number to pal around with, so I feel pretty silly about writing. You know how you feel when you raise your hat twice to the lady who didn't acknowledge the first disturbance.

Maybe it is just as well that you ignored my first request for the labor problem I have on hand has taken on a new aspect. This time I really do need help.

As I told you before, Henry is a waspish old devil who turns agin' the government every Wednesday when his Socialist paper arrives. Right after I wrote you he came down with a misery in his back and asserted that he was unable to do any work. But, as I told you before, I couldn't turn him out for he is too lazy to apply for relief and I would invite the attention of the C. I. O. if I let him starve. They now have to go clear back to the Ludlow affair in Colorado for an example of oppression and they would jump on me with joy as an example of inhuman capitalism.

Well, I simply hired another man to pump my three wells. They make about enough to pay the man and feed Henry and I don't know where the tax money will come from. The new man is much like Henry, only a little younger and he has most of his teeth. But from the minute he set foot on the property a feud sprang into full bloom and I can tell that nothing will lessen the feeling that exists.

They differ quite basically on nearly everything. The new man, whose name is Joe, is a foot-washer and Henry is a shouting Methodist. Joe is a Townsendite and Henry made up a party of his own last year after Earl Browder was put in jail. Their most violent arguments, however, have been over the merits of eating apples. Joe is for the Ben Davis and Henry is a confirmed Jonathan man. I think Henry would have initiated fisticuffs a few days ago but for the fact that he would have had to get out of his chair.

So, with this situation, no ordinary election to form themselves into a union would do any good. Every vote would be a tie and I do not understand that the management, meaning myself, could vote to break the deadlock. And every issue that came up, whether about pay or conditions of work, would reach the same impasse. If I found it possible to raise wages a little, assuming that the price of oil improves or that I am lucky when I deepen No. 1 to the first break in the Mississippi lime, which I plan to do if I can make a deal with a fellow who has a string of tools, one of this pair would vote against the raise if he learned the other wanted to accept it.

Your view probably is that Henry is not actively engaged in the running of this property and doesn't need to be unionized but my retort is that you don't know Henry. He considers himself pumper emeritus and issues orders to Joe in a tone that is loud if not always convincing.

What I need at your hands is a mediator who will put in full time on the job and with authority to make findings whenever necessary. His orders and decisions should have the force of law. I have no fear of the result, for when the man sees how little there is to divide between this pair he will go easy on me.

It will not be necessary to send one of your best men such as you send among the longshoremen or the coal miners. A grade B mediator will do, one just energetic enough to do the little bit of umpiring between Henry and Joe and not bright enough to want to horn into everything around the neighborhood, for we have a lot of disputes that no government agency should try to handle. The mediator should know some theology and be sufficiently versed in currency and exchange to hold up his end. Joe seems to be a hard money man and Henry believes in the free and unlimited publishing of folding money.

Please give this your attention and fix me up with that serial number, so that we can either get action or discuss the subject at the length which I think it warrants.

Very truly yours,
Ellick Botts,
Consulting Pumper and Economic Royalist in a small way.

Ia. Jobbers To Discuss Price Posting Law

DES MOINES, June 7.—Discussion of Iowa's new price posting law, with official interpretations by the state treasurer, is expected to be one of the major points of interest at the one-day meeting of the Iowa Petroleum Association June 16 in Waterloo.

Iowa's new law, Senate File 321 enacted by the recent legislature, requires the posting of a price, and adhering to that price. In view of rumors of price rebating going through the oil marketing industry, and the recent laws in various states to regulate marketing, Iowa's law has attracted much attention and its effects will be watched closely by all industries.

State Treasurer Leo J. Wegeman is to speak at the meeting and to have official interpretations of the act, so M. L. Long, association secretary, has announced.

The meeting will be held in the President hotel, Waterloo, starting at 10 a.m.

Treasurer Wegeman will be the only outside speaker at the meeting. Other speakers will be officers, directors and jobbers. Other topics on the program will be general marketing conditions in Iowa, legislation, and the association's business.

Dismiss Wilcox Suit

By Teletype

TULSA, June 7.—Dismissal of the receivership and accounting suit filed in federal court here by J. G. Hutchison, Cleveland, O., against the H. F. Wilcox Oil & Gas Co. and subsidiaries, has been announced by the federal court clerk. Dismissal was agreed upon by attorneys for both the plaintiffs and the company. Hutchison was listed in the suit as the owner of 1100 shares of common stock.

Fire, Safety Marshals To Meet at Bradford

WASHINGTON, June 5.—Fire and Safety Marshals of the National Petroleum Assn. will hold their twelfth annual meeting at Bradford, Pa., June 16 and 17. Speakers on the first day's program will be announced later. Registration is scheduled for 1 p.m. the first day at the Y.M.C.A.

The events of the second day will be held at the country club. A round table discussion in the morning will be led by Roy Gettings, Hyvis Oils, Inc. A business session will follow and then the annual luncheon.

The first aid contest will take place in the afternoon. Nine teams are expected to participate. The team of the James B. Berry Sons' Co. of the Quaker State Oil Refining Corp. is the defending champion. A plaque will be awarded the winning team immediately following the contest.

Auburn In New Field

CONNERSVILLE, Ind., June 7. — The Auburn Automobile Co., maker of the Auburn and Cord cars, has entered the air conditioning field and will have a unit ready for the market this month, according to a current company announcement. The unit will be made by the company's central manufacturing division here. A few months ago the Nash company, makers of Nash and LaFayette cars, announced a merger with the Kelvinator refrigeration interests.

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Roosevelt Unjustly Attacks The Oil Industry

By WARREN C. PLATT, Editor

WICHITA FALLS, Texas, June 5.—When President Roosevelt listed the depletion allowance on oil producing properties among the "highly immoral avoidances" and "moral frauds" of tax evasion, in his recent message to Congress, he did the oil industry a gross injustice. Furthermore, he said what was obviously not true. Of late the President has uttered many untruths in support of some of his pet ideas, untruths which, for the moment at least, seem to rest primarily upon his advisors.

The use of the depletion allowance for oil and gas properties cannot by any stretch of the English language be called a tax evasion, for the allowance was created by Congress after much study and debate and it has been set as to amount and manner of application by various government tax authorities instructed so to do. To call it "the most glaring loophole in our present revenue law" is to state what every informed person knows is not true. To recommend, as Roosevelt has done twice, that the depletion allowance be done away with, is to take property without any process of law whatsoever.

For those in other branches of the oil industry who may not be informed, the depletion allowance is a part of the receipts from the sale of crude oil that is set aside to return to the owners their capital investment in that particular oil operation and, on this depletion allowance, no income tax is paid. What Roosevelt, seemingly, would do would be to call all returns from the sale of crude oil at the well income, presumably—although maybe not—allow deductions for operating expenses and then tax the remainder as net income.

The best tax and accounting experts in the oil industry and in the government have worked for 20 years on the present law and its method of application. Whether there are any inequalities in it that should be changed is always open to discussion. Some in the oil industry say it is nowhere liberal enough. The government says it is too liberal. Let that point be worked out in due course and without stigmatizing cries of "tax evasion" from the chief executive.

Roosevelt got a quick calling down in Texas newspapers for his damning the use of divided returns for husbands and wife as "tax evasions" and "unjustifiable." Down here the Texas constitution requires division of all property and income between husband and wife and the same is law in seven other states.

The Dallas News called the presidential language, quoted from Secretary of the Treasury Morgenthau, "as untrue as it is unjust." The News further said; "Any federal effort to destroy the community property law affects a basic right of the state and the essential protection of every woman in the eight affected states. It would be a body blow at feminine independence that no woman voter could afford to endorse."

The Fort Worth Star-Telegram also comes vigorously to the defense of the dividend tax return, saying; "The Supreme Court having upheld the right of the states to make this disposition, the income tax law necessarily must recognize it."

Both papers condemn the President's remarks against oil depletion allowance.

One gets the impression here in Texas that the administration at Washington is heading for trouble by its seeming drive against states' rights, in this tax message and in other matters. Texans have a clear idea of their rights as Texans and Roosevelt is liable to find that they cannot be herded down the road as easily as can some of our groups of recent foreign extraction. At least today's generation of Texans are not going to send an unlimited power of attorney down to Washington. They like to use their powers themselves and they feel perfectly competent to do so.

While Roosevelt is building up a class consciousness among some peoples back east, it must not be overlooked that he also is building up a decidedly contra class, among descendants of our early Americans out here. His attack upon the community law of Texas and any following attempt to penalize Texas women for their privileges under their own law, certainly will not add to the administration's popularity out here.

More and more one hears loud complaint from the taxpayer who is staggering under an increasing burden of unjust and unfair tax laws that have been materially added to by certain groups who have been so active in Roosevelt's various "kitchen cabinets."

There has even been rumor in the land that a revolution might be in the making. Roosevelt and the other politicians might well bear in mind that this country was established by a revolution against unjust and unfair taxes. And the taxpayers won.

Want Illegal Power

It is becoming more and more apparent, with the increasing "labor" disturbances over the country, that the chief thing the so-called "labor leaders" want is the power of force to get whatever they desire.

They want the power to keep others from working except upon terms stated by these would-be-leaders and except upon payment of tribute to them. They want the power to inflict discomfort, hardship and financial losses upon the general public until the public has been coerced to do their bidding. And they want the power to violate a contract at will. In short, they want the power to set aside whatever laws may stand in their own selfish way at any time and regardless of the consequences to the general public.

The continuing strikes and labor disturbances at Detroit, in automobile plants where "peace agreements" had been signed, and the battle now on in the steel industry evidence this compelling desire of "labor leaders" to force their desires whatever the cost.

It is only a question of time when the average American, who never will join a labor union and pay cash tribute, will insist that the laws, as he writes them, be enforced for his own protection. John Lewis and some of the other high-handed ones are speeding the day. Perhaps they should really have our blessing.

"Discrimination" Case Is Dropped By Labor Board

N. P. N. News Bureau

WASHINGTON, June 7.—The National Labor Relations Board has dismissed its complaint alleging discriminatory discharge of three workers in the case of Bell Oil and Gas Co., C. J. Bohner Oil Corp., and C. J. Bohner individually, operating wells in Texas and Oklahoma.

The board found the companies did not discriminate "against the three employes for the purpose of discouraging membership in a labor organization," but said no word of criticism against the men or the tactics of their union organization, although two of them testified at the hearing last July that they had turned off the vacuum in Bohner's wells at the instigation of Local 258 of the oil workers union.

All three men worked for all three respondents in the case, dividing their time between them, according to NLRB.

Bohner, as head of the companies, refused to reinstate the three—C. D. Jackson, B. F. Jackson, and F. C. Cox—after a strike, and the case was brought by the labor board, charging they were not reinstated because of their union activity. This Bohner denied, pointing out that he had employed members of Local 258 since 1933.

Vacuum Necessary

Bohner told the labor board at a hearing in Wichita Falls, Texas, last July that he believed the three men named were those who had shut off the vacuum system in his wells during the strike. In the field where these wells are located, all operators must maintain a steady and continuous vacuum to pull oil through the porous sand.

Bohner testified he believed permanent injury had been done to his wells by this cutting off of the vacuum, which was not a necessary effect of the strike, since the vacuum system on Bohner's wells was operated by companies whose men were not out on strike.

The two Jacksons and Cox testified, however, that members of Local 258 felt it unfair to an adjoining oil company, whose vacuum was necessarily cut off because of the strike, for Bohner to continue to pull vacuum, and the two Jacksons admitted that they were selected by the local to cut off the vacuum, which they did. Cox denied having participated.

"Unconvinced"

The Board's decision is summed up thus: "The Board finds itself unconvinced that Cox did turn off the vacuum; nor does the Board pass judgment on whether any permanent injury might have been caused by the shutting off of the vacuum. It does find, however, that Bohner's refusal to reinstate the three men was based on his belief that they had so acted."

The past history of negotiations between Bohner and Local 258, and his subsequent reinstatement of all members, except the three men, are cited as contributing to the board's conclusion that neither Bohner nor the Bell Corp. discriminated against the three employes for the purpose of "discouraging" membership in a labor organization."

Union Election Plan Is Dropped

N. P. N. News Bureau

TULSA, June 7. — Officials of The Texas Co. and representatives of employes at its West Tulsa refinery spent the latter part of last week in conferences over terms of working rules, after the International Oil Field, Gas Well and Refinery Workers union had withdrawn an application for an election by employes to determine a bargaining agency.

The reason for the withdrawal of the application was not made public. Dr. Edwin A. Elliott, regional director for the Labor Relations Board, returned to his home in Fort Worth, although he had been called here to conduct the election.

That the conference succeeded in a satisfactory set of rules is indicated by the issuance of a lengthy statement by oil union officials, which stated in part that "because of the friendly relationship between the union and the company and because of the company's fair and impartial labor policy, these rules embody the fairest and most liberal working conditions enjoyed by any group of employes."

The prepared statement contained a denial of communist tendencies in C.I.O. and also hit the A. F. of L.

TULSA, June 7.—Taxes collected on crude oil and leases netted Oklahoma $1,055,952.42 in May, according to Chairman Nichols of the Oklahoma Board of Affairs. Lease bonuses brought in $688,129 of this amount.

Oil Firms-Union Deadlock on Pay For Rural Driver

N. P. N. News Bureau

CLEVELAND, June 7. — Old friends from weeks of negotiations covering Cleveland drivers, business agents and representatives of Cleveland oil companies were nevertheless unable to agree today, after a month of dickering, on wages for out-of-town tank wagon drivers.

Drivers involved, members of Local 545 of the Petroleum Truck Drivers and Helpers Union, an A. F. of L. affiliate, operate in Lake and Lorain Counties, rural areas adjacent to Cleveland. Companies concerned are Cities Service Oil Co., Texas Distributing Co., National Refining Co., Canfield Oil Co., and eight independents.

Companies have stood pat on an offer equal to a deal made with the union covering Mansfield (O.) drivers. Mansfield has a population of 30,000. This agreement provided for a top of $125. The union has demanded $10 under the Cleveland agreement, or a top of $141.25.

Scale an Issue

The drivers union has also asked that the top wage be paid to drivers employed one year or more, it was understood, while the companies have insisted on more years of experience.

"A driver is well acquainted with his duties after one year," A. J. Pozun, business agent, said, but a company representative replied, "It's not a matter of driving a truck, but of years of relationship with dealers, who are, after all, our customers. Older men would be dissatisfied if we paid younger men the same wage."

Lake and Lorain County drivers had hoped to use the numerical strength of their fellow union members in the city to strengthen their bargaining position, but a separate agreement covering the city drivers was signed May 18.

Closed Shop

A closed shop demand of the union, according to company negotiators, has been opposed on the following grounds:

1. It means that a man must belong to the union before he can be employed.

2. It means the check-off, whereby the companies collect dues for the union by deductions from the pay envelope.

3. A business agent can levy a fine (such as for overtime work) and that, also, must be deducted.

4. In addition to fines, all special assessments levied by the union must be deducted by the employer.

The closed shop demand was understood not to be a stumbling block, however, the union primarily working for the higher scale.

Oral Argument Sought In Valuation Case

N. P. N. News Bureau

WASHINGTON, June 7.—Interstate Commerce Commission Examiner M. A. Pattisen has taken under advisement the request of Gulf Refining Co. to present oral argument before the Interstate Commerce Commission on its protest against the tentative valuation placed on properties of the Gulf Pipeline Co. by the commission's Valuation Bureau. Hearings on the protest were held last week before Pattisen.

At the close of the hearings, in which Gulf officials sought to establish the need for a higher valuation on their pipeline properties, Pattisen fixed July 2 as the date for filing of a brief by the company and August 2 as the date for a brief in support of the valuation by the Valuation Bureau. A reply brief by the company is due Aug. 23. If the request for oral argument is granted, date for such argument will be fixed by this last date.

In the only other pipeline valuation case on which hearings have been held — Atlantic Pipe Line Co. — the request for an oral argument was granted, and argument set for June 25. The tentative pipeline valuations are being issued in compliance with ICC orders issued late in 1934, and valuation date is fixed at Dec. 31, 1934. At that time Gulf Pipeline Co. was operating the pipelines, since taken over by Gulf Refining Co's. Houston Pipeline Division.

Three chief protests against the tentative valuation fixed by the Valuation Bureau were on exclusion of cash working capital, exclusion of certain lands and the method of arriving at the value of other lands which were included, and the exclusion of certain storage facilities from the carrier-used classification. Had they been included, Gulf contends, the value of $33,750,000 fixed by the bureau for carrier-owned-and-used property, upon which rates may be based, would have been swelled.

More Uniformity In Grades Of "Gas" Shown in Survey

N. P. N. News Bureau

WASHINGTON, June 7. — Slightly higher octane ratings of regular and premium grade gasolines during the winter of 1936-37, as compared to the winter preceding, are shown in the report on properties of commercial motor fuels, made jointly by the Co-operative Fuel Research Committee, representative of various technical associations, and the U. S. Bureau of Mines.

This is the third report of this type. The first gave data on motor gasolines sold during the winter of 1935-36, and the second gave similar data for the summer of 1936.

While the winter report of 1935-36 shows the ASTM octane number of 90 per cent of the regular motor fuels to be between 68 and 71, the 1936-37 report shows a slight increase, with the majority of the regular fuels ranging between 68.9 and 71.4 octane rating. The majority of the premium priced gasolines sold during the past winter showed an octane rating between 75.4 and 80.7, which was slightly above that of the preceding winter.

The octane rating of third grade gasoline showed approximately no change, having a reported minimum of 44.8 and a maximum of 69 with 90 per cent of the ratings being between 50.4 and 64.

Vapor Pressures

The survey shows that the range of vapor pressures in which 90 per cent of the samples of regular and premium-priced gasolines are included is within narrower limits than for corresponding samples during the winter of 1935-36. This is notably true in the higher figure for the minimum points. The minimum for the third grade samples, however, reached a new low figure, according to the survey, while the maximum points are considerably lower for the present winter survey.

The range of distillation temperatures is also reported to be considerably narrower the past winter, as compared with the preceding year, and the end points of 90 per cent of the gasolines in the regular and premium price group have a slightly greater range than previously. The survey shows also that the minimum points have been raised and the maximum points lowered for the regular and premium gasolines.

The survey indicates definitely that the range of variations with respect to octane rating and volatility in each of the major price groups is becoming smaller, a tendency which bears out the proof of progressive improvement in gasoline uniformity that has been noted in previous Bureau of Mines surveys.

Octane Ratings

Samples of regular gasoline, taken from 21 cities in various parts of the country, showed an unusually uniform octane rating. While the average for all of these cities was 70.1, the lowest reported was 69 and the highest was 71.4. The sulfur content of the regular gasolines in these cities, while averaging .065 per cent, was shown to be appreciably higher in Seattle, Los Angeles and San Francisco, where the sulfur content percentages ran .130, .122, and .151 respectively.

With an octane average of 77.5 for premium grade gasoline in 20 cities, the survey shows these three west coast cities have ratings of 80 and 80.5. The closest approach to these figures was reported in New Orleans where an octane rating on premium gasoline was given as 78.5. The lowest octane rating on premium fuel was reported in Tulsa and St. Louis, with an ASTM octane number of 75.9.

Average sulfur content for the premium gasoline in these 20 cities was given as .049 per cent, and here the west coast cities were directly in line with the average. The lowest sulfur content on premium gasoline was reported in Denver, with .027 per cent, the highest in Baltimore where .098 per cent was reported.

Third Grade

Reports on third grade gasoline in 18 cities showed the average octane number to be 57.7, with variations ranging from 52.4 in Omaha, to 63 in Boston. Philadelphia, Atlanta, New Orleans, Seattle, Los Angeles and San Francisco also reported octane numbers on third grade of 60 or better.

The sulfur content on the third grade gasolines in these 18 cities averaged .046 per cent, according to the survey. The three west coast cities, as in the case of regular gasoline, showed an average of .113 per cent. The lowest sulfur content on third grade gasoline was reported in Tulsa, .022 per cent.

The following companies contributed data for the survey: Continental Oil Co., Empire Oil & Refining Co., Gulf Refining Co., Humble Oil & Refining Co., Phillips Petroleum Co., Shell Petroleum Corp., Sinclair Refining Co., Standard Oil Development Co. (N. J.), Standard Oil Co. of Ind., Tide Water Associated Oil Co., Atlantic Refining Co., Pure Oil Co., and the Pacific Coast Technical Group representing the major oil companies marketing in that area.

Texas to Hold Hearing Under Sour Gas Law

N. P. N. News Bureau

AUSTIN, Tex., June 7.—The Railroad Commission of Texas will reconsider the gas problem in the Texas Panhandle, now that a new sour gas law has become effective. The commission announced that its statewide oil and gas proration hearing here June 18 will investigate and prorate the market for sour gas. Proration depends on the demand being less than the maximum of 750,000,000 cubic feet daily allowed under the new Act for carbon black manufacture.

The commission also has requested oil purchasers to make nominations for the last six months of the year, as well as nominations for July.

Bill Provides $1,000,000 For Alcohol Fuels

N. P. N. News Bureau

WASHINGTON, June 7.—Congressman Clarence Lea, California, has introduced another "alky-gas" bill, which would authorize expenditure of $1,000,000 of Department of Agriculture money for experimentation in "the development of renewable sources of fuel supplies of agricultural origin for internal-combustion engines."

This latest draft of Lea's proposal is less specific than the two which were introduced at the last session, but, like them, it does not mention alcohol, although it is clearly an "alky gas" bill.

The new measure, numbered H. R. 7379, would authorize the secretary of agriculture "independently or in co-operation with federal or state institutions" to conduct the investigations. Lea's first proposal of last year would have set up a fuel research commission, and the second would have made the Bureau of Chemistry and Soils the agency for conducting the experiments.

Hearings were held by the Interstate Commerce Commission on Lea's first proposal last year, at which it was revealed that the directors of the Bureau of Mines and the Geological Survey, who would have been members of the proposed commission, declined to serve.

The $1,000,000 to finance the experiments, which would include tests of various farm products for commercial alcohol possibilities as well as actual manufacture of alcohol and blending tests with gasoline, would come from an obscure Agricultural Adjustment Administration account in the treasury labeled "3T556, proceeds distilled spirits industry, parity payments, Agricultural Adjustment Act. . . ."

Provision is made for selling any motor fuel manufactured by the proposed governmental alky-gas plant to federal agencies and for sales to the general public of any remaining surplus "at not less than a minimum price."

Motor-gasoline Survey, Winter, 1936-37

(Summary of data of the survey)

Test	Regular-price gasolines			Premium-price gasolines				Third-grade gasolines			
	Min.	Range of 90%	Max.	Min.	Range of 90%	Max.		Min.	Range of 90%	Max.	
Gravity, degrees A. P. I.	49.2	58.3 - 65.9	68.2	49.3	57.9 - 67.9	77.7		55	56.9 - 62.5	65.8	
Sulphur content, %	0.007	0.028- 0.14	0.35	0.007	0.022- 0.19	0.165		0.005	0.021- 0.13	0.27	
Reid vapor pressure lb.	7.3	8.4 - 12.4	12.8	5.5	7.3 - 11.2	12.2		2.6	5.7 - 9.8	10.7	
Copper-strip test	....	Neg.	....	....	Neg.	....		....	Neg.	....	
ASTM octane number	64	68.9 - 71.4	74	74	75.4 - 80.7	83		44.8	50.4 - 64.0	69.0	
Initial boiling point, °F.	67	83 - 94	107	80	86 -103	116		76	86 -104	143	
10% recovered	107	115 -144	160	110	117 -150	158		119	127 -159	198	
20% recovered	130	136 -174	192	117	134 -175	187		141	160 -195	219	
30% recovered	145	160 -202	221	120	154 -202	210		159	175 -224	240	
50% recovered	192	235 -256	273	136	185 -250	259		216	229 -278	283	
70% recovered	225	260 -302	323	169	230 -298	314		258	278 -326	334	
90% recovered	287	335 -370	390	245	289 -364	390		312	335 -386	391	
End point	342	382 -415	443	335	358 -415	426		368	388 -427	437	
Dist. loss	0.8	1.0 - 3.4	5.0	0	0.9 - 2.8	4.0		0	1.0 - 2.9	5.0	

Oil Exports 6.7 Times US Imports

N. P. N. News Bureau

WASHINGTON, June 7.—Exports of petroleum products from the U. S. in April totaled $29,663,478, against imports valued at $4,435,410 during the same month, according to figures of the Bureau of Foreign and Domestic Commerce.

Crude petroleum led the export list, both in quantity and value, with 4,898,537 barrels, valued at $7,234,273, leaving the country. Other large exports included gasoline, 2,125,740 barrels valued at $5,372,142; gas oil and distillate fuel oil, 2,403,330 barrels valued at $3,467,484; residual fuel oil, 1,282,395 barrels, $1,129,592; lubricating oils, 969,398 barrels, $7,104,433, and kerosine, 762,068 barrels, $1,797,540.

Fuel oil, including topped crude, was the chief petroleum import during the month, 3,918,487 barrels, valued at $2,163,645, entering the country. Crude ranked next, with 2,512,037 barrels, valued at $2,022,750, coming in.

Other imports were in small quantities, down to gasoline, only seven barrels of which were listed among inshipments.

Compared with figures for April, 1936, the petroleum exports the past April showed an increase of more than $9,000,000, and imports an increase of about $1,000,000.

WASHINGTON, June 7.—The civil aeronautics industry in the U. S. produced aircraft, engines, equipment and spare parts valued at $78,148,893 in 1936, and furnished employment for more than 30,000 persons, the Bureau of Air Commerce reports.

DES MOINES, June 7.—Ellen Long, daughter of M. L. Long, secretary of the Iowa Petroleum Assn., graduated today from Grinnell college in the course in journalism.

Motor Fuel Stocks Reduced Again Biggest Cut in Gulf District

N. P. N. News Bureau

NEW YORK, June 8.—Another sizable reduction in crude runs to refinery stills the past week helped lower total motor fuel stocks 864,000 barrels, to 74,082,000 barrels on June 5, according to the American Petroleum Institute.

Crude runs were lowered 70,000 barrels, to 2,934,000 barrels daily average. All districts, except the East Coast, showed decreases, ranging from 1000 barrels in the Rocky Mountain district to 22,000 barrels in the Texas Gulf. East Coast plants increased runs 8000 barrels. Operating capacity of reporting plants declined from 82.8 per cent the previous week to 80.9 per cent the past week.

Motor fuel stocks at refineries declined 442,000 barrels, to 44,038,000 barrels June 5. In-transit and terminal stocks increased 669,000 barrels, to 22,999,000 barrels; while stocks of unfinished gasoline declined 91,000 barrels, to 7,045,000 barrels.

A decline of 661,000 barrels in the Texas Gulf district and one of 345,000 barrels in California accounted chiefly for the total decline in motor fuel stocks. Indiana - Illinois - Kentucky declined 130,000 barrels. East Coast district reported a gain of 162,000 barrels and Appalachian a gain of 114,000 barrels.

Sales To Consumers of Bottled Gas In Cal. Reported By Mines Bureau

DAILY AVERAGE PRODUCTION IMPORTANT DISTRICTS
American Petroleum Inst. Figures

	Week Ended June 5 Barrels	Week Ended May 29 Barrels
Oklahoma City	152,200	165,300
Total Okla....	642,350	660,800
East Texas...	463,250	462,200
Total Texas..	1,413,550	1,433,300
Rodessa	49,550	49,600
Total La.	246,600	248,600
California	661,400	658,100
E. of Rockies..	2,876,750	2,915,600
Total U. S...	3,538,150	3,573,700
Crude Imports	75,140	86,430
Tot. new sup'ly	3,613,290	3,660,130

CLEVELAND, June 7.—Liquefied petroleum gas sales by California producers in 1936 totaled 23,646,284 barrels, the U. S. Bureau of Mines, San Francisco, reports. This is the first time a special report has been put out on this product in California.

Sales of propane and propane-butane to consumers totaled 6,134,290 barrels, or 26 per cent of the total sales. Internal-combustion engine fuel sales totaled 12,307,910 barrels, or more than half the total.

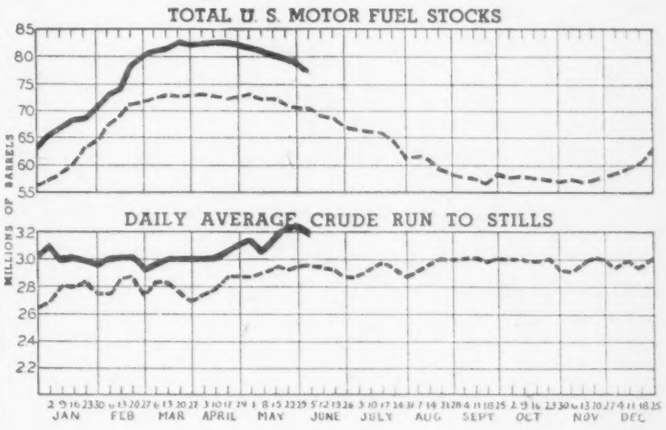
Detailed figures by uses are given in the accompanying table.

Liquefied Petroleum Gas Sales By California Producers in 1936

(In Barrels)

Sales to consumers for:	Propane	Propane-Butane	Butane	Total
*Domestic uses	5,044,202	1,090,088	.....	6,134,290
Gas-manufacturing	.....	1,701,502	2,394,341	4,095,843
Industrial fuel	389,967	603,648	111,867	1,105,482
Solvents, raw material for chemical mfg.	.....	.....	1,195	1,195
Internal-combustion engine fuel	91	2,748,618	9,559,201	12,307,910
All other uses	.....	1,564	.....	1,564
Total	5,434,260	6,145,420	12,066,604	23,646,284
Exports	41,663	27,325	2,946	71,934
Total Sales	5,475,923	6,172,745	12,069,550	23,718,218

*To "bottled-gas" trade or directly for use as "bottled-gas."



CURRENT REFINERY OPERATIONS

Districts	Per Cent Capacity Reporting	Daily Average Crude to Stills (Barrels) Week Ended		Per Cent of Reporting Capacity Operated Week Ended		Stocks Thousands of Barrels Total Finished and Unfinished Motor Fuel*		Total Finished and Unfinished Gas & Fuel Oil		Cracked Gasoline Production % Total Capacity Reporting	Daily Av. Production (Barrels) Week Ended	
		June 5	May 29	June 5	May 29	June 5	May 29	June 5	May 29		June 5	May 29
East Coast	100.0	559,000	551,000	83.6	82.4	19,138	18,976	7,060	6,648	100.0	112,000	111,000
Appalachian	88.4	105,000	110,000	81.4	85.3	2,971	2,857	682	636	94.6	28,000	28,000
Ind., Ill., Ky.	92.1	442,000	453,000	94.6	97.0	13,713	13,842	5,223	5,009	98.5	134,000	132,000
Okla., Kans., Mo.	84.6	282,000	289,000	74.2	76.1	8,838	8,783	3,133	3,039	90.3	74,000	73,000
Inland Texas	56.6	139,000	153,000	69.2	76.1	1,922	1,967	1,551	1,504	71.7	39,000	41,000
Texas Gulf	95.5	685,000	707,000	90.5	93.4	9,723	10,384	6,681	6,662	98.0	159,000	159,000
La. Gulf	96.3	139,000	144,000	88.0	91.1	1,328	1,375	2,053	1,995	100.0	28,000	29,000
No. La., Ark.	63.7	40,000	42,000	69.0	72.4	454	441	378	362	77.5	7,000	6,000
Rocky Mt.	69.7	53,000	54,000	85.5	87.1	2,047	2,028	755	748	85.4	14,000	14,000
California	90.9	490,000	501,000	65.7	67.2	13,948	14,293	67,713	67,363	93.0	77,000	72,000
Total Reporting	88.8	2,934,000	3,004,000	80.9	82.8	74,082	74,946	95,229	93,966	94.8	672,000	665,000
Estimated U. S. Total (Bur. of Mines Basis)		3,195,000	3,245,000			77,494	**78,758	97,402	**96,139		740,000	730,000

*Includes stocks at refineries, in bulk terminals, pipe lines and in transit.
**Revised.

Fullers Earth and Bauxite Compared at N.P.A. Meeting

BRADFORD, Pa., June 4.—The merits of high quality fullers earth were brought out here last night at a dinner meeting of the National Petroleum Assn.'s Department of Manufacture. Ogden FitzSimons, The Floridin Co., presented the subject as a comparison of the "Economics of Fullers Earth and Bauxite Adsorbents."

The meeting duplicated the large attendance of 75 at the Warren meeting last month. Kendall Refining Co. acted as dinner hosts. E. E. Bown, of the same company, who is chairman of the Bradford group, opened the meeting. FitzSimons was followed on the program by S. M. Wolbert, Kendall Refining Co., with a paper on "Refinery Water Systems and Sources of Supply," and by A. R. Worden, Hall Laboratories, Pittsburgh, who discussed some "Problems on Water Treatment and Their Solution."

The fullers earth known as floridin was discussed in the generic sense as used in texts. The bauxite type material was described as weighing 1.7 to 1.9 times as much as fullers earth. It was pointed out that equal volumes should be used in comparison tests, since a column of adsorbent material was said to be analogous to a distillation column where the degree of fractionation is a function of the height. While the percolation of oils through bauxite gives a higher A.P.I. gravity, lower viscosity, lower carbon residue, and higher viscosity index than percolation through floridin to equivalent colors, the degree of improvement was said to be small, except on very light colors. These gains, FitzSimons said, are of such minor importance that the whole question of merit hinges on cost.

Comparing a plant whose capacity is 500 tons of fullers earth with a plant of 850 tons capacity of activated bauxite, a yearly expenditure of $60,900 was shown for the former and $85,980 for the latter. The bauxite figure of $85,980 includes about $10,000 depreciation on investment. A number of charts were shown to illustrate the performance of each type of material.

Water Supply Depleted

It is becoming more and more difficult to obtain a continuous and suitable source of water supply around the Bradford area, according to Wolbert. Gravel wells, rock wells, creek water, and city water are the sources of supply. Growth of water requirements of the Kendall Refining Co., has been from about 1100 gallons per minute in 1920 to 8700 in 1936. As demand becomes greater it will be necessary to utilize water that was previously considered of unsuitable quality the speaker said. Installation of a cooling tower was said to be one means of combating the difficulty. The next step was said to be water treatment. This has not as yet been attempted.

Principal trouble makers in water were said to be mud, silt, and organic matter and, in the case of gravel water, iron. In connection with the corrosion problem, it was stated that Transite pipe has been as satisfactory as cement line cast iron pipe.

Pretreatment of water for boilers is becoming a necessary procedure, with the trend toward the use of large and more efficient boilers in refineries, Borden stated. Years of continuous service without cleanout have been experienced when water treatment is applied, he said.

A so-called threshold treatment for prevention of scale formation aroused considerable interest. This treatment was described as giving temporary results—long enough for water to pass through a system. As a substitute for lime or soda ash treatment, its cost was said to be much less. Sodium metaphosphate is used in the process to produce the short period under-saturation of calcium carbonate in water. Addition of one or two pounds per million pounds of water is all that is required.

Gasoline Demand For First Quarter 12.07 Per Cent Over Last Year

N. P. N. News Bureau

NEW YORK, June 7.—Gasoline consumption in the U. S. in the first quarter ended March totaled 4,309,520,000 gallons, an increase of 464,186,000 gallons, or 12.07 per cent, over the corresponding period of last year. This period last year had one extra day, due to Leap Year. Daily average demand this year increase of 464,186,000 gallons, 13.32 per cent, according to tax reports filed by wholesalers and dealers, the American Petroleum Institute reports.

Five states in this period showed decreases in consumption. These were Kansas, Nevada, Oregon, South Dakota and Washington. Decreases were less than 5 per cent in each state, except in Washington, where it was 6.08 per cent. Increases ranged from 0.47 per cent in Oklahoma to 30.86 per cent in North Dakota. Twenty-two states showed increases of 15 per cent or more.

In March this year, consumption increased 202,020,000 gallons, or 14.07 per cent over March a year ago. Daily average demand increased 6,517,000 gallons over daily average demand of March last year.

Detailed figures are shown in the accompanying table.

Gasoline Consumption by States, March, 1937
(Figures in Thousands of Gallons)

	Month of					3 Months Ended With			
	Feb., 1937 Gallons	Mar., 1937 Gallons	Mar., 1936 Gallons	% Change 1937 over 1936		Mar., 1937 Gallons	Mar.,1936 Gallons	% Change 1937 over 1936	
Alabama	16,175	18,569	15,577	+19.21		50,689	44,570	+13.73	
Arizona	7,560	8,680	8,240		+ 5.34	23,674	22,588		+ 4.81
Arkansas	*10,732	12,496	11,456	+ 9.08		36,572	31,720	+15.30	
California	118,130	147,061	150,919		— 2.56	396,064	391,294		+ 1.22
Colorado	12,754	16,853	14,988	+12.44		43,336	39,570	+ 9.52	
Connecticut	19,821	24,153	19,922		+21.24	64,449	55,994		+15.10
Delaware	3,418	4,158	3,487	+19.24		11,037	8,904	+23.95	
District of Col.	9,263	10,971	9,808		+11.86	30,044	26,911		+11.64
Florida	29,982	32,153	31,929	+ 0.70		92,644	88,597	+ 4.57	
Georgia	23,525	27,217	23,405		+16.29	74,402	64,064		+16.14
Idaho	4,006	5,990	5,343	+12.11		14,165	13,095	+ 8.17	
Illinois	80,082	97,660	87,708		+11.35	260,392	229,073		+13.67
Indiana	36,501	51,073	43,443	+17.56		125,419	106,663	+17.58	
Iowa	24,713	37,251	27,754		+34.22	93,075	75,156		+23.84
Kansas	25,152	34,945	36,661	— 4.68		87,323	88,691	— 1.54	
Kentucky	16,975	19,511	16,167		+20.68	53,210	43,716		+21.71
Louisiana	15,689	18,908	16,940	+11.62		51,790	47,219	+ 9.68	
Maine	7,501	8,728	6,558		+33.09	23,751	19,441		+22.17
Maryland	16,328	20,595	17,186	+19.83		54,871	46,168	+18.85	
Massachusetts	42,482	53,603	43,365		+23.61	139,132	121,297		+14.70
Michigan	69,297	85,624	67,427	+26.99		227,504	188,012	+21.00	
Minnesota	24,083	36,581	28,540		+28.17	86,134	76,233		+12.99
Mississippi	(†)11,815	16,414	12,934	+26.90		(†)40,906	33,843	+20.87	
Missouri	37,285	45,167	43,850		+ 3.00	120,694	116,580		+ 3.53
Montana	5,138	7,631	7,591	+ 0.53		18,210	16,698	+ 9.05	
Nebraska	12,458	20,199	17,961		+12.46	46,270	45,248		+ 2.26
Nevada	1,809	2,473	2,485	— 0.48		6,140	6,295	— 2.46	
New Hampshire	4,840	5,695	4,697		+21.25	15,385	13,527		+13.73
New Jersey	50,410	62,869	51,810	+21.34		166,345	144,224	+15.34	
New Mexico	5,830	7,273	5,399		+34.71	18,764	15,400		+21.84
New York	110,944	132,399	111,959	+18.26		362,305	316,522	+14.46	
North Carolina	24,960	30,910	26,018		+18.80	82,362	68,873		+19.58
North Dakota	2,947	8,354	5,513	+51.53		15,799	12,073	+30.86	
Ohio	84,682	99,476	84,583		+17.61	270,527	232,646		+16.28
Oklahoma	25,999	29,306	28,264	+ 3.69		79,001	78,628	+ 0.47	
Oregon	11,709	17,931	19,254		— 6.87	41,473	43,148		— 3.88
Pennsylvania	89,617	106,996	89,075	+20.12		288,049	240,638	+19.70	
South Carolina	13,218	16,149	12,901		+25.18	43,066	34,865		+23.52
South Dakota	4,150	10,100	9,318	+ 8.39		19,771	20,164	— 1.95	
Tennessee	15,644	23,924	20,198		+18.45	58,389	52,339		+11.56
Texas	85,669	95,849	88,554	+ 8.24		262,218	243,401	+ 7.73	
Utah	5,080	6,454	5,730		+12.63	16,493	15,244		+ 8.19
Vermont	3,586	4,128	3,251	+26.98		11,314	9,579	+18.11	
Virginia	21,078	27,034	21,049		+28.43	70,584	61,084		+15.55
Washington	17,840	27,444	28,975	— 5.28		62,425	66,469	— 6.08	
West Virginia	12,329	17,268	12,320		+40.16	42,506	32,638		+30.23
Wisconsin	30,136	40,075	32,180	+24.53		100,622	87,039	+15.60	
Wyoming	2,961	3,986	3,572		+11.59	10,225	9,193		+11.22
Total 47 States and Dist. of Columbia	1,306,303	1,638,284	1,436,264	+14.07		4,309,520	3,845,334	+12.07	
Daily average	46,654	52,848	46,331		+14.07	47,884	42,256		+13.32
Change from previous year:									
Total change		+202,020				+464,186			
Percentage change in Daily Average		+14.07%				+13.32%			

*Revised.
†Revised in January and February to 12,677,000 and 11,815,000 respectively.

Extension Time Of "Hot Oil" Law Debated

(*Continued from page* 9)
business to such an extent that they can afford to lose money in marketing and still be ahead.

Following out Biermann's reasoning, Congressman John Luecke, Michigan, declared: "If the independent jobbers are put out of business, you and I know that the price of gasoline is going up, regardless of what price is received at the wells. The only motive behind this thing is to put these little fellows clear out of business so there will be no competition whatever. Not only will the consumer suffer but labor will suffer as well."

Congressman John W. Gwynne, Iowa, asserted the bill was "purely a price-stabilizing bill . . . a price-boosting bill," and Congressman John J. Cochran, Missouri, asked Dies to explain "why it is that the price of crude oil has jumped from 8 to 10 cents a barrel since this bill passed the Senate?"

Tariff Repealer

Biermann's other amendment would have repealed "all tariffs on crude oil and all of its products," on the theory that true conservation of American resources would not bar inshipments of foreign oil resources which could be used while U. S. resources were being conserved.

Congressman Gerald J. Boileau, Wisconsin, when Biermann had finished speaking in behalf of his two amendments, said:

"I think the gentleman (Biermann) this afternoon . . . has just about knocked into a cocked hat any argument that this is a conservation bill."

Proponents of the bill, including Dies, Congressman Wesley Disney, Oklahoma, and others, answered all objections on behalf of marketers by declarations that the problems of the marketer are not involved in this bill.

Two Major Accomplishments

In presenting the bill to the Committee of the whole House, Chairman Clarence Lea, California, of the House Interstate Commerce Committee, which reported the measure out, said the "hot" oil law has accomplished "two things which practically nobody will deny:

"First, it has tended to stabilize the oil industry. This is one of the great industries of our country, which before this act went into effect was in deplorable condition. It is an industry which deals with a great natural resource of the country, an industry which furnishes an exhaustible supply of oil to the people of the U. S. That is a product we can afford to use beneficially but not to waste.

"Second, under the operation of this act the reclaimable oil in the fields has been materially increased. I do not think there is any doubt of this. Orderly production has made possible a more efficient use of pressure that prevents waste and substantially increases the supply of oil that a field will eventually produce. That helps the nation and the oil consumer as well as the producer."

Exhaustion in 15 Years?

Congressman William P. Cole, Maryland, whose subcommittee held hearings on the bill, citing the need for conservation, set the life of American petroleum resources "as known today" at 15 years, adding, "I hope I am wrong." "As one not living in an oil district but who has lived with this problem for some years I am willing to stand on that prediction," Cole stated.

Cole pointed out, however, that "there are most convincing reasons for the extension of this bill for a temporary (two-year) period only," citing the fact that both Texas' proration law and the interstate compact both are temporary."

House Seeks To Limit Tax 'Evasion' Probe

By Teletype
N. P. N. News Bureau

WASHINGTON, June 8.—The resolution to set up a joint congressional committee to investigate alleged "tax evasions" covered in the President's message of last week, struck a snag in the House, after passing the Senate almost before the voice of the clerk reading the message had died away.

Several prominent House members insisted the resolution was too broad in the powers it delegated and drafted amendments to curb these powers, which, it was said, virtually gave a treasury department clerk power to hold hearings to investigate alleged evasions.

The resolution was drafted in accordance with President Roosevelt's message, in which tax evaders were excoriated as "immoral."

In some quarters, it is hoped that the question of depletion allowances on oil producing properties, which were lumped together with what the President termed "immoral" tax evasions, may be taken up separately.

2-Yr. Extension Of Federal 'Gas' Tax Being Sought

N. P. N. News Bureau

WASHINGTON June 7.—The House Ways and Means Committee has made a favorable report on the measure (H.J. Res. 375) introduced by its chairman, Robert L. Doughton, North Carolina, to extend until June 30, 1939, all excise taxes levied under the Revenue Act of 1932, as amended. This would include the federal gasoline and lubricating oil taxes, tax on pipeline transportation, and the import taxes on crude and fuel oil and other petroleum products.

House action on the resolution may be expected soon, for, unless extended, the taxes automatically expire June 30 this year, and, after passage by the House, the measure must receive Senate approval and be signed by President Roosevelt in time to "revive" them.

"Party" Vote

Vote in the Ways and Means Committee for extension of the taxes was strictly along party lines, with the seven Republican members voting "no" to the proposed extension of taxes levied five years ago as "temporary" revenue-producers. The Republican members filed a minority report, along with that of the 18 Democratic members who recommended passage of the bill by the House.

The gasoline tax of one cent a gallon has been the largest revenue producer of the so-called "nuisance tax" group, and the estimated yield from it in the fiscal year beginning July 1 is placed at $204,000,000, according to a tabulation included with the majority report.

Lubricating oil tax (4 cents a gallon) is expected to bring in $33,300,000 during the same period, and the pipeline transportation tax is figured to be worth $11,000,000 to the federal government in the coming fiscal year. This tax is collected as 4 per cent of the cost of transportation.

The committee makes no estimate of what the government will get from the import taxes, which are a half cent a gallon on crude and "all liquid derivatives of petroleum except lubricating oil and gasoline or other motor fuel"; 2.5 cents a gallon on gasoline, 4 cents a gallon on lubricating oil, and 1 cent a pound on paraffin and other petroleum wax products.

The majority asserted that "the revenues provided by the temporary provisions above referred to cannot be spared at this time."

The minority report, however, recalls the "definite promise to the American people" made in 1932 when these taxes were first imposed "that they would be allowed to expire at the end of two years, as provided in the statute."

Since then they have been extended on two occasions, once for one year and once for two years, and the "present proposed extension constitutes a third breach of faith on the part of the Administration."

"Politics" Charged

Minority members pointed out that these taxes fall most heavily upon the poor and those least able to pay, and that they are discriminatory, applying only to certain items.

An "element of politics" also is seen by the Republican members in the seeking of a two-year instead of a one-year extension at this time. A one-year extension would require another resolution to extend next year, just before Congressional elections, "which, of course, would work to the political disadvantage of the Democratic party," said the minority report.

Hearing Upon Motion In 3 Per Cent Suit

By Teletype

TULSA, June 8.—Arguments to transfer the three per cent suits of the federal government from the equity to the law side of the docket were being heard here today by Federal Judge Kennamer.

The suits were filed several months ago by the Department of Justice against purchasers and pipe line companies, to recover payment for the three per cent deducted from gross oil produced, a custom which has prevailed in Oklahoma since oil was first produced.

The suit is on behalf of the Osage tribe and seeks payment in the case of some companies back to 1913. Oil company attorneys seek to try it as a law case, contending, among other things, that the contract for payment of royalty to Osages is between the producer and the tribe and not between the purchaser and the Indians.

Harry W. Blair, special assistant to the attorney general, is in Tulsa in preparation for the hearing on this preliminary motion but the argument was being handled for the government by the firm of Moss & Young, especially retained in the case.

Oil Makes Impressive Success In Using Geophysical Methods

N. P. N. News Bureau

WASHINGTON, June 1.—The impressive record which has been established by the oil industry in the application of geophysical methods to the finding of new oil fields lends encouragement to the application of these methods to the search for metals, K. C. Heald, staff geologist for the Gulf Oil Corp., Pittsburgh, points out in a report entitled, "Technology and the Mineral Industries", just issued as a part of the National Research Program of the WPA. The purpose of the report is to review the mineral industries, to see what outstanding technical changes, now under way or anticipated, may influence future social conditions. Heald contributed the portion of the report dealing with the petroleum industry.

"While geologic science has been applied for many years to the search for mineral deposits, the only industry which can be said to have organized a mass attack upon the problem is petroleum", said Heald. "Today, the oil industry employs thousands of geologists. Their effectiveness is proved by the fact that most of the petroleum currently produced in the U. S. comes from fields where no seepages of oil or gas, the visible signs that attracted the early explorers, exist."

Cites Record

The record made through the use of geophysical methods is impressive, said Heald, when it is recognized that the methods are young, that most of the geophysical effort to find mineral deposits has been concentrated in North America and that more than nine-tenths of it has been directed to the search for oil or gas.

"Petroleum and natural gas deposits in foreign lands and deposits of other minerals everywhere, that can be found only through applied geophysics, remain to be discovered," he said.

If discovery of new deposits should cease today, proven reserves in the U. S. would meet the requirements of this country for periods ranging from 10 years for petroleum to probably more than 2000 years for coal, he stated.

"In the petroleum industry we may safely count upon great additions to reserves through discovery of unexploited pay sands in many of the fields that are now producing, both by deeper drilling and by intensive prospecting of strata already penetrated," said Heald. "The successes attained in petroleum offer hope that resources of other minerals may be increased. Over the world as a whole there is a possibility of enormous additions to available reserves."

In a chapter on Petroleum and Natural Gas in the report, Heald pointed out that changes which have been made in improvement of design and quality of equipment for drilling now allow operators to drill wells 7000 to 10,000 feet deep with as much confidence as was felt a few years ago in attempting to drill half that depth.

"The equipment and materials now available are strong enough to withstand the stresses that would normally be expected in a well 15,000 feet deep, which is more than 2000 feet deeper than the deepest hole yet drilled and 5000 feet deeper than the deepest well yielding oil or natural gas," he said.

He predicted future methods used in the oil industry would allow the recovery of oil from finely-textured layers of sand which is now left in the ground after oil or gas is exhausted from the coarser layers.

Regarding the employment outlook for the next ten years in the mineral industries, the report stated:

"In coal mining the forces making for labor displacement are strong enough to be a cause of some concern. In metal mining also the chances of expansion beyond the level of the 1920's seem unfavorable. In oil and gas, on the other hand, the trends point to an increase in [total] labor requirements. The relations of the different branches are in part complementary. Thus if metal proves more difficult to win, fuel will be required in greater volume in the mining, concentrating, and smelting of low-grade ores, and if supplies of oil and gas fail to meet expectations, there will be an increase in demand for coal. . . .

Taking the mineral industries as a group, there seems little chance that the total demand for labor will rise greatly above the levels of the 1920's."

KANKAKEE, Ill. — Baron-Huot Oil Co., has remodeled a company station on East Court St., Kankakee, by enclosing the lubrication department.

Distillate Burners Sold In 1937 Doubles 1936

N. P. N. News Bureau

WASHINGTON, June 7.—Shipments of distillate oil burners by American manufacturers during the first four months of 1937 were more than double those for the same period last year and more than triple those for the first four months of 1935, Census Bureau monthly statistics show.

Shipments during the first third of 1937 totaled 65,022 burners, compared with 28,741 in the January-April period of 1936 and 17,320 during the same four months a year before that.

The April figures show an even larger percentage of gain. Shipments were 24,068 burners, compared with 7398 in April, 1936, and 4836 in April, 1935. March shipments this year totaled 22,942 burners. The types of burners included in this report are used in ranges, stoves, water heaters and space heaters.

Gains in shipments of burners for No. 1 oil or heavier were not so great, although the 48,212 such burners shipped during the four-month period were well in advance of the 34,197 shipments recorded in the January-April period, 1936. In the same period of 1935, 23,320 such burners were shipped by American manufacturers.

Sixth Sentenced In 'Gas' Tax Case

NASHVILLE, Tenn., June 7.—Tennessee maintained its record of 100 per cent convictions in the "gas" tax fraud cases the past week, but relented on the 5-year prison terms in the case of Mrs. Dora Dillard, owner of the Hammett Oil Co., who entered the sixth plea of guilty.

Attorney-General J. Carlton Loser agreed to the $1000 fine for Mrs. Dillard, in view of her widowhood and support of a daughter.

Mrs. Dillard was charged with evading the state's 7-cent gas tax by receiving gasoline billed as kerosine. She entered a plea of guilty as had other defendants in the suit following the first trial of W. H. Land, of Memphis, and G. G. Gean, of Halls.

The petition of Gean and Land, scheduled for June 5, for suspension of sentence, was deferred when Gean failed to appear for the hearing. The court issued a capias for Gean for June 12. Land posted $1000 bond to pay his fine provided the prison sentence is suspended, plus the $200 cost in the case.

The plea in abatement of J. L. Fossick, under indictment for evading the tax as an employe of the Dixie Oil Co., was heard by the court June 5 but judgment was reserved in the case.

Fossick claims that, as a bookkeeper, without interest in the firm, or profit from the transaction, he should not have been indicted, and that he could not have conspired without members of the firm, none of whom were indicted.

Sloan & Zook Enters Bolivar Field

BRADFORD, Pa., June 5.—The Sloan & Zook Co. has acquired approximately 1000 acres of producing properties in the Bolivar field to assure an adequate supply of crude for its refinery at Warren, Pa. Arrangements have been made to pipe crude from the new properties to Warren.

Sloan & Zook will install its own gathering lines, to pipe the crude to the company tank farm at Myrtle, Pa. Bradford Transit Co. will carry the oil from Myrtle to Duke Center, and from Duke Center to Warren under special tariffs. These require 15,000 to 25,000-barrel tenders and the installation by Sloan & Zook of adequate storage to handle such quantities at both Myrtle and Duke Center.

Offices are being opened by the company in the Bliss Bldg., at Bolivar, N. Y., where D. L. Evans will be superintendent.

Chemists' Open House At Bartlesville

N. P. N. News Bureau

TULSA, June 7.—Open house for the petroleum group of the Oklahoma section of the American Chemical Society will be held by the Bureau of Mines at its Bartlesville, Okla., station the afternoon and evening of June 12.

The meeting will be divided into three sections, the first an inspection of the new laboratory buildings and grounds, the second a buffet luncheon and the third an informal get-together and an address by Dr. Robert E. Burk, of Western Reserve University, Cleveland. He will speak on "Observations of Polymerization of Hydrocarbons."

Reservations for the meeting should be sent to Harold Smith of the Bureau of Mines, Bartlesville.

Octane Loss in Sweetening Debated at Refiner Sessions

By JACK N. WESTSMITH

COLORADO SPRINGS, June 5. — Technologists attending the seventh midyear meeting of the American Petroleum Institute's refining division here this week finished up two days of committee meetings in time to hear and discuss some dozen papers dealing with improvements in procedure and technique in the manufacturing branch of the oil industry.

Perhaps for the first time on record a technical man brought up the subject of octane number in terms of dollars and cents value. Although the question was not actually posed, one paper prompted thought along lines of what conservation of octane number in the sweetening process means in terms of reducing leading costs.

Another paper showed that analysis of results obtained by various sweetening processes indicated losses in octane number were often the rule, rather than the exception.

In a discussion of refinements in sweetening technique, J. A. Altshuler, Stratford Engineering Corp., and F. G. Graves, Standard Oil Co. of California, said that one of the most lucrative possibilities of improved sweetening procedure may be found in the conservation of octane number.

Losses in doctor sweetened gasolines from most sources were declared to vary from half a point to as high as two points, representing a combination of the loss of light ends during sweetening, chemical reactions taking place during the process, and the deteriorating effect of excess free sulfur in the doctor-sweetened gasolines as a result of poor operating control.

Losses Not Realized

It was pointed out that the ASTM-CFR method of determining octane number, by definition, allows a tolerance of such magnitude that, unless great care is used in making comparisons, many refiners miss entirely the loss which they are suffering during the sweetening process.

Consequently, they do not recognize the unnecessary cost of the increased use of tetraethyl lead or other means of attaining the desired octane number, it was said.

For the purpose of eliminating errors in octane comparisons as far as possible, and in order to be certain of differences in true octane number between sour and doctor-sweetened gasolines, as well as between gasolines sweetened by other methods, the authors pointed out that a system of comparison had been developed for simultaneous testing of samples under parallel conditions.

"One of the most logical ways to evaluate the loss of octane upon sweetening by any method," it was declared, "is to consider these losses in terms of tetraethyl-lead requirements. For octane losses equivalent to 0.1 cc. of tetraethyl lead per gallon, the cost per annum to the refiner is $4292 per 1000 barrels of daily throughput at existing prices for tetraethyl lead."

It was further revealed that, in bringing a gasoline up to "Q" specifications, lead savings as high as 0.2 cc. per gallon are possible and, when leading to premium grade gasolines, these savings are as much as 0.35 cc. of tetraethyl lead per gallon. The monetary value of such savings in these two instances was calculated to be $8584 and $15,023, respectively, for each 1000 barrels of daily throughput, per year.

Although it was pointed out that the larger the value of lead susceptibility, the more readily does the gasoline respond to addition of tetraethyl, this factor for a particular gasoline was declared not altered greatly by the sweetening process. This prompted the conclusion that the important consideration is to choose a sweetening method that will cause minimum octane loss in order to reduce lead costs.

Cost Discussed

The authors discussed sweetening losses and their cost to the refiner. Other considerations taken up in the paper were gum stability, inhibitor susceptibility, and the influence of sweetening method upon previous refinement.

In conclusion, the stand was taken that unavoidable losses in gasoline, octane number and inhibitor susceptibility by "doctor-and-sulfur" sweetening fully justify improvements in the treating method to be used by any refiner.

In cases where the "doctor-and-sulfur" sweetening method is employed efficiently, it was declared that extensive research work and plant modifications to improve present sweetening operations cannot be justified on the potential savings in chemical costs alone.

Furthermore, the "sulfur-and-lead" method was pointed to as requiring a higher degree of previous treatment for quality of finished product and resulting in unnecessary high processing costs. The lead-sulfide process was offered for realization of all potential savings possible by sweetening.

Since octane ratings are of especial significance at the present time, a paper by W. A. Schulze and A. E. Buell, Phillips Petroleum Co., dealt mainly with this phase of the sweetening problem in another paper presented at the midyear meeting.

Other Results

While it was pointed out that sweetening treatment is primarily to improve the odor of gasoline, other properties are also affected in varying degrees. Here again, octane number headed the list in importance to refiners — "not only because it is especially susceptible to adverse change, but because even small losses are reflected in costly increases in tetraethyl-lead requirements."

The authors presented experimental data to show that naphtha solutions of mercaptans and the corresponding disulfides have the same octane number within the range of concentrations encountered in commercial gasolines and that these compounds act similarly in naphthas containing tetraethyl lead equivalent to 1 cc per gallon.

In their study it was found that losses from one-half to three octane numbers occurred on gasolines sweetened in plants employing various modifications of the doctor-sweetening process. The losses were explained on the basis of the higher alkyl polysulfides formed during the oxidation of the mercaptans in the gasolines.

Experimental data were declared to confirm the statement that the deleterious alkyl polysulfides are not formed in sweetening by the copper process. Direct comparison of sour and copper-sweetened gasolines was pointed to as showing that for all practical purposes the octane number is unchanged during the sweetening treatment.

A considerable study was made by the authors of the reactions of doctor treating in an effort to determine the source of deleterious oxidation products. While it was granted that the mercaptans are converted to disulfides without formation of more than mere traces of extraneous compounds, the effects of these compounds were declared so pronounced that there is little doubt they exist in appreciable quantities.

This premise was thought further substantiated with improvements in analytical methods and a better realization of the sig-

A.P.I. Board Urges Separate Posting

(*Continued from page 9*)

memorandum. "With tax totals ranging as high as 11 cents per gallon, the buying public easily may conclude that gasoline prices are too high, whereas the price of gasoline, or the amount of money the consumer is asked to exchange for one gallon, is low." The board's resolution on separate posting of gasoline prices and taxes read:

"It is recommended that, in announcing changes in retail gasoline prices, the prices of the gasoline and the taxes imposed be separated so that consumers may appreciate the difference between the price of gasoline, which is the amount of money they are asked to exchange for a gallon, and the cost of gasoline, which is the price plus such taxes as may be imposed. In any published statement relative to gasoline prices, use of the phrase 'price including taxes' should be avoided. It would be preferable to say 'retail price plus federal and state taxes of .. cents.'"

Pointing out that the average gasoline computing pump either gives no indication of the cost of the taxes upon gasoline or presents as the price of gasoline a figure which includes taxes, the board recommended that metering, or computing, pumps show "the exact price of the gasoline itself, the various taxes imposed upon the commodity and the total cost to the consumer."

The board went on to say that pumps of this type could be easily altered to meet this need merely by inserting a panel below the face of the dial stating the state tax, the federal tax and the total taxes. "Representatives of manufacturers of gasoline pumps and dispensing equipment have expressed a willingness to comply with its recommendations, provided a request for the incorporation of tax signs, or panels, is made to them by purchasers of gasoline pumps," said the board's statement.

nificance of effects of doctor treating which were formerly disregarded or attributed to other causes.

Choice of Agents

With a proper choice of sodium-polysulfide treating agent it was found possible to convert a large proportion of the mercaptans in naphtha solutions to alkyl polysulfides higher than the disulfides. Furthermore, it was found that the properties of solutions containing these higher polysulfides were similar to the properties of doctor-treated solutions.

From the magnitude of the effects in these experiments it was found possible to estimate the extent of undesirable side reactions occurring in the various modifications of doctor treating. Octane number losses were found to be proportional to the amounts of the higher polysulfides present.

The higher alkyl polysulfides formed in doctor sweetening were declared to be very unstable compounds, and to make gasolines less color stable to sunlight and potentially corrosive. Synthetic and natural gum inhibitors were likewise found less effective. Copper-sweetened gasolines, the writers concluded, are therefore considerably superior to gasolines sweetened by conventional methods.

Economics of Storage

W. B. Franklin, Humble Oil and Refining Co., in discussing the economics of investments for storage of light ends apparently exploded several theories relating to the storage of butane gas.

Revelation number one was that heavier base stocks cannot be counted on to prevent vapor evolution of the lighter ends in refrigerated storage.

"It has been found", the author said, "that vapor evolution from refrigerated storage is a function of the quantity of butane stored, and is practically independent of the concentration of butane in the stored liquids for propane-free casinghead varying from 30 to 100 per cent butanes."

A typical situation was analyzed in which it was assumed that 40,000 barrels of butane must be stored for six months in the form of casinghead of Reid vapor pressure varying from 30 to 60 pounds per square inch. An average atmospheric temperature of 75 degrees F., and an average temperature of the liquid delivered to storage of 80 degrees F., were selected.

For the sake of simplicity, 100 per cent inventory was considered, thereby eliminating vapor evolution due to breathing; and it was assumed that all vapors evolved were compressed, completely condensed, and returned to the tank.

It was considered evident from this illustration that the total vapor evolution and, hence, the processing expense are substantially independent of the quantity of butane-free base stock stored.

"It is also apparent", Franklin said, "that, when it is required that only butane be stored, no appreciable reduction in operating expense can be effected by the use of base stock for 'holding' the butane, except in unusual circumstances where small quantities of butane are stored in large refrigerated tanks."

Conclusions

Under circumstances where both butane and base stock must be stored, it was stated that pressure storage becomes more desirable as the vapor pressure of the stored liquid decreases. Refrigerated storage, in view of comparisons made by the author, appeared to be the more profitable investment for relatively large quantities of light ends where little or no additional operating labor is required for operation of the compressor plant.

On the other hand, the conclusion was drawn that the additional investment required for pressure storage (over refrigerated storage) could be paid out in from two to three years when labor was required. In highly-active service, pressure storage was declared generally more economical.

Another conclusion drawn was that seasonal storage of butane appears profitable for any type of tankage when a price differential of $1.50 per barrel ($2 per barrel for the product as gasoline, less $0.50 per barrel as fuel) can be realized.

In the case of refrigerated tankage requiring no additional labor for operation of the gas plant, seasonal storage was indicated as profitable for price differentials as low as $0.50 per barrel.

The economics of investments for seasonal storage of butane was compared with the cost of additional vapor recovery. It was shown that plants operating at butane recoveries in excess of 50 per cent, which can realize on additional recovered butane for only a fractional part of the year, may profit by providing storage for excess production of butanes during the summer months to meet the seasonal demand rather than by decreasing vapor-recovery facilities.

Lubricating Diesels

As a windup of the technical refining session, two papers were presented on the subject of lubricating diesel engines. Both of these stressed the need for co-operation between engine manufacturers and the oil refiners if pressing lubricating problems were to be solved.

C. G. A. Rosen, Caterpillar Tractor Co., added to his previous contributions in this direction with a discussion of the need for development of test procedure for evaluating diesel engine lubricants. "The necessity for better economy and the urge for higher specific power yield have placed ever-increasing demands upon lubrication," he said.

In commenting on predictions made by Dr. G. M. Maverick that "crankcase oil of the future should be made with the same precision and understanding that metallic alloys are made today," and another by C. M. Larson that "motor fuels of the future will require a high stability petroleum oil to which will be added one to five per cent of proven addition agents," Rosen said:

"A fitting conclusion to these expressions may be deduced after summarizing laboratory and field testing of some 200 lubricants offered for diesel engine use, from which were selected less than five outstanding products.

Alloyed Lubricants

"Full scale engine tests, involving over 239,500 engine cylinder test hours in the laboratory and some 300,000 engine cylinder test hours in the field, revealed outstanding results with alloyed and compounded lubricants. Full justification for their existence has been determined on the basis of superior field performance and lowered maintenance cost."

"Dr. Maverick", the speaker pointed out, "says it is most important that tests, devised to determine the value of addition agents, should evaluate these agents in terms of performance in service, rather than in terms of properties supposedly similar to the older, purely mineral oils."

Rosen quoted Larson to the effect that a new set of tools is needed for measuring lubricating oil quality in consideration of laboratory and actual service operation experience with various types of oils. Service tests show, he said, that new methods of measuring oil quality are needed since highly rated oils gave poorer service than oils with addition agents which would have been rejected by the laboratory.

In the opinion of Rosen, the lubricant should possess the following qualities: (a) high film strength; (b) resistance to ring sticking; (c) low cylinder and ring wear; (d) insurance of open oil channels and free acting oil controls; (e) low blow-by of gases in crankcase; and (f) economical oil consumption.

Since it is believed not possible to devise a complete chemical and physical specification which will cover all types of lubricants satisfying these characteristics, the speaker thought it imperative that final full scale engine operating tests be the ultimate criterion for judging the suitability of a lubricant.

However, careful consideration was thought necessary of chemical and physical characteristics having to do with the following: corrosiveness of the lubricant to ordinary babbitt bearings; homogeneity of all lubricants compounded with metallic soaps; compounded oils limited to a maximum of 0.18 per cent by weight of non-combustible portion; carbon residue by coking examined to eliminate oils yielding hard abrasive residues; and viscosity conforming to limits prescribed for the recommended grades, as required by localized climatic and service conditions.

Data Summarized

Prof. G. C. Wilson, University of Wisconsin, followed with a discussion of diesel engine lubricating problems, in which he summarized information collected from over 30 manufacturers of these engines.

It was stressed that a majority of these manufacturers agree that piston ring sticking is a major problem; especially so in the case of the high speed, high duty engines.

It was pointed out that some engineers think that the diesel engine should be so designed and operated that regular commercial lubricants would meet all requirements, while others believe that the greatest progress can be made by developing both the oil and the engine to meet severe operating conditions.

Lubricating oil specifications, the speaker said, are not extensively used in present day practice. Manufacturers have come to realize the futility of even an accepted list of branded oils. The nature of any brand was declared to change as rapidly as the refiner finds ways of improving his product, and continual service testing is necessary to keep any such list up to date.

In the discussion following these papers, the question was asked whether any relation had been found to exist between ring sticking and the grade of diesel fuel used. Rosen said that detailed facts in support of this were not yet available.

Proration and Unit Operations Topics in Production Sessions

By LAWRENCE E. SMITH

COLORADO SPRINGS, June 5. — The semi-annual exchange of views on the many phases of finding and producing oil at the mid-year meeting of the American Petroleum Institute here, brought out authorities on numerous subjects. As usual, the program committee had arranged for papers on topics currently of high interest to the producing industry, as well as those on problems of research.

Lyndon L. Foley, consulting engineer, Tulsa, handled the major paper on proration. This subject for years has been as vital to the producer as is drilling technique itself. Foley's wide experience in Texas proration qualified him to talk about the equities of proration plans. After discussing the various technical factors to be considered, he summarized the several proration plans that are either in effect or have been proposed, as follows:

"Per-well allowables — equitable only if well spacing and reservoir conditions are uniform.

"Straight potential — equitable only if well spacing is uniform, and if well potentials are proportional to recoverable oil in place in the drainage area of each well.

"Per-acre allowables — equitable only if reservoir conditions are uniform.

"Acreage allowance plus any other allowance — will not give allocations proportional to the recoverable oil under a lease.

"Acreage times potential — equitable only if potentials are proportional to the recoverable oil under a lease. This plan gives each lease a per-acre recovery proportional to the well potentials.

"Acreage times index of recoverable oil — equitable if the index of recoverable oil is accurate. This plan gives each lease a per-acre recovery proportional to the index of recoverable oil and is reasonable in the light of our knowledge of indices of recoverable oil at any given time it may be applied. . ."

Rights of a Witness

As technical production men know, more and more of their time is consumed in courts and at hearings conducted by the various oil and gas regulatory bodies. Yet, little has been written as to the rights which a witness possesses. William M. Fleetwood, Jr., Barnsdall Oil Co., Tulsa, gave the Colorado Springs meeting the benefit of his experience as attorney.

There is nothing scary about being a witness, Mr. Fleetwood asserted. The witness needs only to remember a few principles. "It is believed," he said, "that if a witness will prepare his testimony properly, will testify only in answer to questions, will testify audibly, understandably and respectfully and will refuse to testify other than with strict truthfulness, he will have discharged his principal duties properly. In order that he may be protected in the discharge of those duties, he may rely upon his right to expect the court and counsel to assist him, upon his right to have questions properly phrased, upon his right to refuse to answer when he does not know, upon his right to deliberate briefly, upon his right to admit having discussed the case before trial, and upon his right to answer fully.

"In such direction lies increased efficiency on the witness stand, and consequent furtherance of the ends of justice."

Unitized Pool

Discovered in January, 1934, the unit operated part of the South Burbank pool, Osage county, Okla. — 2720 of the 4000 productive acres — three years later, was flowing all but 1.56 per cent of its production. This is due to the maintenance of pressure, for which purpose the unit was formed. Carter Oil Co. operates under the direction of an advisory committee made up of the representatives of the 16 companies that own interests in the unit. An engineering committee works under the advisory committee.

Pressure is maintained by returning gas to the sand. To the end of January, 1937, total gas production from the unit had been 9,429,166,000 cubic feet, of which 4,930,539,000 cubic feet had been returned through the key wells. But gas injection was not started until nearly six months had passed after discovery of the field; it required some time to form the unit and obtain necessary approval of the Department of the Interior — the field is on Indian land. The proportion of gas returned is now much greater. In January, 557,822,000 cubic feet were produced and 496,904,000 cubic feet returned.

Major benefits for unitized operations cited by I. S. Salnikov and M. L. Haider, Carter Oil Co. engineers, who presented the paper on South Burbank, were:

1—Crude oil production with minimum dissipation of gas from the reservoir, resulting in conservation of available gas energy.

2—Return of produced gas to the reservoir to maintain pressure and to facilitate drainage.

3—Elimination of gas wastage occasioned by frequent potential tests.

4—Sustained long flowing life of wells and lower production costs per barrel.

5—Increased oil recoveries or yields per acre.

6—Low drilling and development investments effected by wider spacing.

Pumping From Slant Holes

The technic of drilling angle holes to effect certain purposes, such as that of extinguishing wild wells or producing oil from under tidelands has been successfully developed. Producing oil through holes that deviate greatly from the vertical is another question. D. K. Weaver, Wilshire Oil Co., Norwalk, Cal., discussed this problem, citing experiences of the Wilshire company in the Huntington Beach field. Some of the deviations are great. Mr. Weaver told of one that drifted 3000 feet in reaching a vertical depth of 4230 feet.

As the fluid level in such holes is decreased, due to exhaustion of pressure in the sand or to sanding up at the bottom of the hole, production troubles naturally increase. On the economic side, concluded Mr. Weaver after describing the kinds of pumping equipment being used, abandonment of such wells is indicated long before they reach the exhaustion stage. He doubts that slant holes, such as those in Huntington Beach, can be pumped down to the stripper stage of 10 to 20 barrels daily. "With the continued lowering of the fluid level, more and more sand trouble will develop," he said. "The rock pressure will probably be reduced at such a time to the point where sufficient back pressure could not be built up to hold back the sand. If it could be built up to this point, it would probably not allow the fluid to enter the hole. In either case, the wells in their present mechanical condition probably cannot be pumped to the stripper point. In the future it may be possible that repressuring, or artificial water-flooding, may be employed to obtain additional recovery."

Throughout the two days preceding the formal opening of the mid-year meeting, engineering sub-committees largely dealing with standardization of equipment met and conferred on changes, chiefly minor, necessary in the equipment used in today's oil fields. It was in Colorado Springs years ago that the whole program of standardization was worked out. This stands as one of the institute's prime achievements. Now, the program is a continuing one and will so be for as far in the future as one can see, for changes are needed from time to time. Hence, the committees continue to meet and to handle such business as comes before them, responsive to the suggestions of producers and manufacturers of equipment.

Programmed papers dealing with use and handling of equipment and with measurements and standards were prepared by a half dozen authors.

Accident Record For Oil Bettered

COLORADO SPRINGS, June 5.—Safety practices in the oil industry occupied a group session June 3, in the mid-year meeting of the American Petroleum Institute here.

The efforts of the industry to promote highway safety were surveyed broadly by J. F. Winchester, head of the automotive transportation division, Standard Oil Co. of New Jersey, New York. He found that a good job had been done but urged continued application to the task. Equipment itself presents hazards unless maintained in the best of condition, personnel must be trained and kept on its toes, he said.

The number of units operated on highways by the industry makes the task a large one. Winchester showed that 21 major companies last year were operating 28,580 trucks and 17,720 passenger cars. About 25.4 per cent of the petroleum tonnage in the U. S. is moved by motor truck, Interstate Commerce Commission reports show.

"We, as automotive and safety men, should continue contributing to all phases of the subject," he said. "Our efforts in the past stimulated action that brought about standards for cab - to - axle measurements, frame widths, standards for tank measurements and constructional features. Our organization, the American Petroleum Institute, was the first national association to encourage an automotive conference group. From this section of the industry has come many an interesting idea that has been woven in an experience

structure which is producing results.

"Our responsibility does not end with the vehicle and its personnel. We have to throw around our loading platforms at bulk plants safety devices of various character; at unloading points supply properly vented tanks, tight connections for the unloading of the material, and then, when it is pumped into the customer's tank, it is handled by carefully designed pumps that carry out calculating processes faster than many humans can make similar multiplications.

Safety Axiomatic

"Yes, all of this safe handling of gasoline has removed from the minds of progressive men the thought that gasoline should be stored only in 500-gallon lots. Only a hundred years ago, there were less than 100 miles of railroad in the U. S. and canal owners and others scoffed at its possibilities. Automobiles were little thought of and aviation entirely out of the question and yet today look at the existing state of affairs. Airplanes flying over our heads, some with a thousand gallons or more of gasoline within their tanks to supply their mighty engines.

"Yes, our pioneers, inventors and broad minded business men have established safety records. We as practical business men banded together for the specific purpose of promoting safety must look at these questions in a broad manner in order that progress may continue yet we must listen attentively to the types of warnings that are given us. Sales executives, safety experts, traffic and automotive men should work together to see to it that all sound suggestions are adopted and coordinated with current practices for, by such action, better safety records can be established in the future."

H. N. Blakeslee, for many years in direct charge of the safety work of the institute, discussed the value of accident statistics.

"Perhaps the greatest value of the "Annual Summary of Injuries" is to provide data on accident experience comparable with other industries as gathered by the National Safety Council," said Mr. Blakeslee. "A comparison of accident experience of the petroleum industry with that of all industries shows that, from a frequency of injuries 18 per cent worse than the average of all industries, since 1930 (with the exception of 1936) the petroleum industry accident frequency has been below the average for all industry.

Accident Rate Cut

"The severity of injuries in 1934 and 1935 was below the average for all industries, as compared with a severity rate 30 per cent greater than the average for all industries in 1927. Accident frequency and severity for 1936 increased slightly above the average for all industries. This was due to increased activities and employment in the operating departments, such as drilling, production and pipeline, and to a decrease in the hours reported in the less hazardous retail marketing department. As many service stations were leased during the past year, the hours of employment over which the companies have jurisdiction have materially decreased."

Papers on safety were also presented at the meeting by G. O. Lockwood, Empire Oil & Refining Co., Bartlesville, on "Development and Use of Accident-Prevention Manuals," in which he discussed certain of the safety code books that have been published by the institute and by R. B. Roaper, Humble Oil & Refining Co., Houston, on "Preventing Rotary-Drilling Accidents."

In this field, the problem now is that of preventing human failure, Mr. Roaper said. Formerly, chief concern was that of safety of equipment but engineers, metallurgists and manufacturers of oil field equipment have so improved the equipment that less than one per cent of all accidents in rotary drilling is due to equipment failure. He outlined the methods most successful in training personnel, including holding of meetings, use of manuals and code books.

Pure Will Close Eastern Refinery

CHICAGO, June 7.—Pure Oil Co. reported today it was discontinuing refining operations at its Marcus Hook, Pa., refinery "about July 1."

A company official here said the reason for the shut-down was "economical" and not labor trouble. Refinery equipment will remain intact and a crew of maintenance men will be kept, he said. Marcus Hook properties will be used for terminaling and storage, as well as compounding and blending.

The Marcus Hook plant was built in 1911 by the Pure Oil Co. of New Jersey. It was built primarily as a terminal, and additional refinery equipment was added later. The plant currently has a daily capacity of from 12,000 to 15,000 barrels of crude daily.

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Proper servicing of the new type of hypoid gear rear axles, which are being used to an increasing extent in the new model cars, presents a problem for the oil companies in educating their dealers to the need for the exclusive use of lubricants designed for this purpose

Trend Toward Lighter "Lubes" For Hypoid Axle Servicing

By **JOHN W. THOMPSON**
N. P. N. Staff Writer

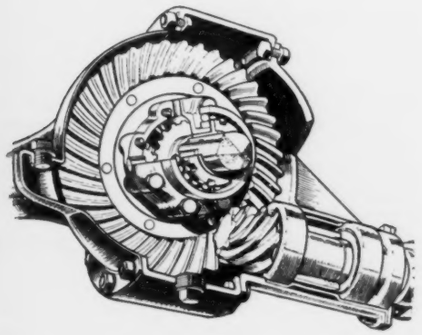
• • •

"X", the great unknown in the hypoid equation, comes encouragingly closer to being a known quantity as the critical weeks roll by. Failures of the new type hypoid axles have been so scarce that figures are being withheld on the grounds that they might be branded as misinterpreting the truth.

Viewing the hypoid situation at a glance, from the car manufacturers' side of the fence, we find many happenings the past few weeks.

General Motors has discontinued packaging its own brand of hypoid lubricants. This means that sufficiently large approved lists of hypoid "lubes," available through the oil companies, have now been prepared for Chevrolet, Cadillac and LaSalle. Chevrolet now has over 150 such "lubes" on its approved list, and Cadillac-LaSalle has over 50.

Similarly, Packard has jumped its number of approved hypoid lubricants from six early this year, to over 75 at the present time. Packard, up until the first of the year, had recommended its own brand of lubricant, which was obtainable only through Packard dealers.



The hypoid gear, which brings a new lubrication problem to the oil companies. The teeth of the hypoid gear are even more curved than those of the spiral bevel type. In the hypoid axle, the pinion gear engages well below the center line of the ring gear

Studebaker, at present the only car manufacturer still specifying its own brand of hypoid lubricant, is continuing that policy with no apparent intention of changing it for the time being.

Buick, Cadillac and LaSalle, with hypoid axles on their small models only, are now recommending an SAE 90 grade hypoid lubricant for all 1937 models, regardless of type of axle and irrespective of season. Buick, however, recommends an SAE 80 grade hypoid "lube" for extremely cold sections where temperatures are below —10° F. It originally specified an SAE 160 grade for summer.

Reports from car manufacturers and oil companies indicate that the trend is unmistakably toward the use of lighter oils in differentials. Some oil companies, however, are having difficulty in educating their dealers on the fact that an SAE 90 grade hypoid lubricant is heavy enough for summer. As a result, many dealers are following the customary rule of ordering an SAE 160 grade for summer servicing, just as they have in years past.

This practice of using a heavier oil for summer had some justification in past years, as it had a tendency to quiet the gear and to reduce leakage to a degree. The situation in regard to hypoids is quite different, according to one oil company engineer.

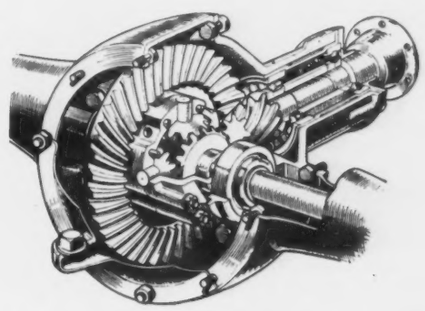
In the first place, he states, the hypoid gear is inherently much more quiet than the spiral bevel axle, or spur or helically geared transmission. To the average ear, the gears are as quiet with an SAE 90 hypoid lubricant as they are with anything heavier.

In regard to leakage, manufacturers are now building axles which will retain relatively light oils in warm weather, so that a heavy gear oil is not needed from this standpoint. It is reliably reported that car manufacturers using hypoid axles are now considering the use of an SAE 80 grade hypoid lubricant for all-season service.

"The most serious objections to the use of the heavier oils," states one oil company engineer, "is that there is always a possibility that the summer oil may not be drained when cold weather comes. In such cases, the heavier lubricant would be almost certain to channel. If this happens, the gear teeth are likely to score, because hypoid gears must be kept flooded with oil at all times in order to prevent damage."

"It should be realized," he continues, "that the viscosity of the lubricant has nothing whatsoever to do with its protective effect. Kerosine, if it contained the active materials which are responsible for the load carrying ability of hypoid lubricants, would be just as effective as an SAE 160 or even an SAE 250 gear oil. Without these same materials, the heavy gear oils would not afford adequate protection to the gears."

This engineer also stressed the point that lighter gear oils are preferable be-



The spiral bevel gear. In this type of gear the shafts of the ring gear and the pinion are in the same horizontal plane

Standard Oil Co. of Ohio stations are displaying this banner to promote the necessity of using hypoid lubricants in hypoid axles

cause they create less drag and consequently heat up less in service. These lower temperatures are an important factor in prolonging the life and effectiveness of the lubricant and the chemicals which it contains.

However, the expressions of satisfaction being handed back and forth between the automobile and oil industries are somewhat premature, if we are to believe some observers. A prominent automotive research engineer recently told this writer that he attributed the success of hypoids to date to the following factors: the excellent educational job being done by oil companies among their dealers; the fact that most new cars are taken to large stations during the first months of prideful ownership, in which the proper lubricants are most likely to be found, and the fact that comparatively few new cars with hypoid axles have had their differentials drained.

SOME are inclined to place added importance on the latter factor as the reason for so few hypoid failures to date. If that be so, then the time is just around the corner for the crucial test of lubricant and axle.

The test is not so much a matter of the design of the axle or the effectiveness of the hypoid lubricant, as it is of the job of education done by the oil companies in getting their dealers to understand the importance of putting hypoid lubricants in hypoid axles.

The job of educating these dealers is a tremendous one, and possibly 100 per cent effectiveness is too much to ask. The biggest job which oil companies face today in the distribution of hypoid lubrication information is educating their smaller dealers, who will get the job of servicing this year's car next year.

A half-day trip in your car, questioning dealers along the highway about methods of servicing hypoid axles, will offer a good example of the educational job still necessary to be done.

For example, a General Motors research executive tells of his experience recently at a service station in the south, where he stopped in his Oldsmobile for a rear axle drain and refill. The Oldsmobile, while not having a hypoid rear axle, specifies a hypoid lubricant in the rear end, and that is what was asked for by this customer. His request was turned over to a young colored fellow, who assured the customer that he had "just the stuff for the axle."

The General Motors man, doubting the attendant's assuring remark, asked to see the "stuff." He was led to the rear of the station where the drums were stored. A top was removed, and the attendant pointed into it.

"Here 'tis," said the attendant. The "hypoid lubricant" turned out to be fibre grease. With that, the customer made a polite exit, stating that he didn't believe he would "take the time today."

In another instance, an oil company representative, traveling in strange territory, drove into one of his company's dealer stations, bought some "gas," and casually asked the attendant what he was using to lubricate these new hypoid axles.

"Oh," replied the dealer, "I've got some of that 600W around here that seems to do the trick all right."

In another instance a dealer was found who had developed an alleged novel method of flushing out hypoid axles. He rests the weight of the rear of the car on the rear axle housing so that the rear wheels are free to turn. Then he injects kerosine into the axle, turns on the engine and puts the car in gear, thus letting the axle automatically flush itself.

In Detroit, right under the nose of the automobile industry, there is an independent oil company that refuses to sell hypoid lubricants through its station outlets, claiming that they are unnecessary. For proof, this company turns to a large Packard that has been running around the streets for about a year, with only a straight mineral oil in its hypoid rear axle, and is showing no signs of weakening.

While these are only a few scattered cases, they were chosen at random and should indicate to the oil company that the job of hypoid education is by no means complete.

Car manufacturers, too, have had a servicing problem on hypoids to consider. The tendency many years ago was for the buyer of a new car to first drive it carefully and slowly to his favorite service station and have the "stuff" drained out that was put in at the factory. With the advent of hypoids it was necessary to change this viewpoint of the new car owner. Specifications state that the factory fill should stay in the car for at least 2000 miles, and in some cases for the first 6000 miles.

Car manufacturers recommend refill periods every 6000 miles, or "every six months, whichever occurs first," for the most part. Packard and Pierce Arrow, however, recommend refills of hypoids every 10,000 miles. While no definite action has been taken, there is talk of extending the refill period on Chevrolet hypoids to 10,000-mile intervals.

Most oil companies are following the recommendations laid down by car manufacturers for methods of servicing hypoids. The old oil should be completely drained out, and all parts flushed with an SAE 10 or 10-W engine oil, or a light flushing oil. It is good practice to wipe the interior out thoroughly to remove all traces of old oil and residue. Practically all oil companies are following the car manufacturer's recommendations of not mixing hypoid lubricants in rear axles, not using hypoid lubricants in transmissions, and not using water, steam, kerosine, gasoline, or alcohol as a flushing agent.

AS AN exception to this rule and an indication of the progressive thought in the oil industry, one of the largest oil companies is now stating that its hypoid lubricant can safely be used at all chassis points where a gear oil has been used or specified. This includes, differential, steering gear, Tryon shackles, oil-type universal joints, and transmission (including the overdrive type).

Thus, with what appears to be the making of an all-purpose lubricant, it is interesting to note what this company has to say about its hypoid lubricant, particularly in view of the fact that it violates most of the rules held sacred by the hypoid fraternity whose creed is "use hypoid lubricants only for hypoid axles."

This company has found that, in the corrosion of bronze parts in transmissions, such as thrust washers and synchromesh cone facings, the result is only a surface blackening. The company has examined many bronze parts of transmissions operating over a long period of time exclusively on its hypoid lubricant, and, although they have been blackened on the surface, it is claimed they have shown no signs of excessive wear or corrosion.

This company claims that its product successfully withstands all oxidation tests laid down by automotive engineers for hypoid gear lubricants and, because temperatures are higher in rear axles than in transmissions, that it will be satisfactory for transmission service from an oxidation standpoint.

Likewise it is claimed that its product offers no danger of excessive separation of lead soap and formation of sediment,

For Immediate Delivery

Brookins HYPOID GEAR LUBRICATOR

THOUSANDS IN USE . . .

- Lowest cost—fastest operation—durable—light weight—leak proof.
- Empties completely 1, 2, or 3 pound cans (of standard 59/16" height). Dispenses one pound in eight seconds.
- Telescoped dispensing tube guarantees full delivery of entire contents.
- Operation of relief valve automatically returns lubricant in outlet nozzle to can.
- Dispensing tube inserted close to side of can and reaching lowest point insures complete drainage.
- Hand operated—no danger of moisture from compressed air in lubricant.
- Sharp steel cutter easily pierces container. No danger of injury to operator's hands when opening.
- Curved discharge tube fits all openings and makes same easy to service.
- No air line necessary; no danger of bursting or possibility of injury to operator.

Brookins manufactures all types of sturdy, modern, efficient service station necessities. Send for the new Brookins catalog for specific information.

SPEED EFFICIENCY at LOW COST

$3.75 ANYWHERE IN THE UNITED STATES

THE Brookins MANUFACTURING CO.
DIVISION OF
THE CINCINNATI BALL CRANK CO., *CINCINNATI, OHIO U.S.A.*

such as lead sulfide, thus its use in transmissions from this standpoint is claimed to be satisfactory.

Neither will this lubricant foam "markedly more than a straight mineral gear oil," according to the claim, which is given as another reason why its use in transmissions is perfectly safe.

This company claims that it is using the only hypoid lubricant sold today which has as its base a pure paraffin-base cylinder oil, making possible its high resistance to oxidation and high viscosity index.

The above claims of this company, backed by an extensive research program, are ample proof that the hypoid situation is a constantly shifting one. The end of 1937 will settle many questions on the subject for both the oil companies and the automotive groups.

Destruction tests in laboratory and on proving ground have not yet proved a match for the many and varied tests which John Q. Public, sitting behind the steering wheel, can conceive to bring out the best—and the worst—in a car.

In the meantime, oil companies appear to be taking seriously their work of educating dealers and customers on the importance of proper hypoid lubrication.

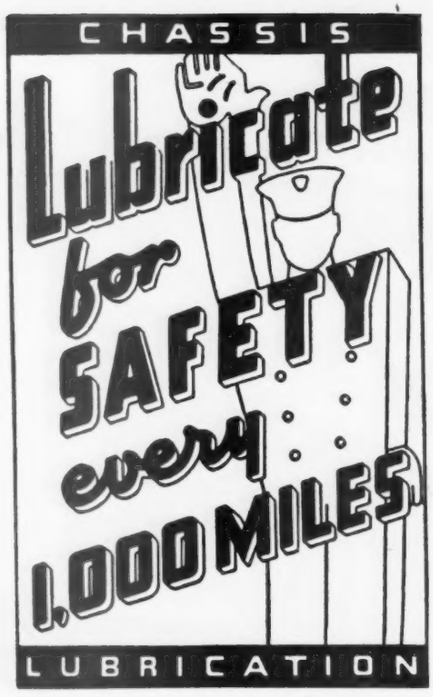
The Pure Oil Co., Chicago, is issuing two tags for station men to place on customers' cars as a warning to use the proper hypoid lubricant and to remind them of the brand that is in the housing. One metallic tag is fastened on the gear case and reads "Contains Purelube Extreme Pressure Lubricant. Do not mix." The other tag is placed inside the car, on the dash or steering column, and also carries a warning against mixing hypoid "lubes," or using unsuitable grades.

The Standard Oil Co. of Ohio uses a similar indicator for the information of the station attendant. When a differential has been filled with "Sohipoid," the original plug is replaced with a Sohio tamper-proof gear seal. This plug contains a rim around its outside end into which is tapped a thin metal disc. This disc carries the message "Use Only Sohipoid." The disc can be easily removed by a tap of the hammer.

Standard is also using station banners to carry the hypoid story to customers.

Humble Oil & Refining Co., Houston Texas, in addition to its educational material going out to dealers and station attendants, is issuing small hand-out folders explaining facts about hypoid gears and the company's hypoid lubricant. A copy of this folder was sent out in the mail to every credit customer along with April 1 statements, and liberal quantities are being mailed direct to company-operated stations and to dealers for distribution among customers.

These are only a few glimpses of the methods in which oil companies are approaching the educational job on hypoids. The important thing to remember is that oil companies are not shirking their obligations in this respect. Neither can they afford to shirk it in the future, for the hypoid scene is continually shifting. And with these shifts, dealers and station attendants must be kept informed so that their record of service to the motoring public will not be discounted because of lack of proper and timely information.



This symbol has been adopted by the National Lubricating Grease Institute in its current drive to promote more regular lubrication

Grease Makers Adopt Safety Emblem

The "Lubricate For Safety" symbol shown in the accompanying illustration has been adopted by the National Lubricating Grease Institute as the official emblem of its current drive toward more regular lubrication, according to D. S. Hunter, executive secretary, Cleveland.

Members of the institute, who manufacture a large percentage of the nation's output of lubricating greases, are being urged to use the design in their promotional material. A similar privilege is extended to oil jobbers and station operators.

It is Hunter's opinion that, given widespread publicity, the emblem will serve to co-ordinate the activities of individual companies into a national movement, thus benefiting the company that uses it and at the same time furthering a nationwide safety drive.

Membership in the institute, formerly restricted to grease manufacturers, was recently made available on an associate basis to manufacturers of products used in the manufacture and distribution of grease. Its executive offices are in the Keith Bldg., Cleveland.

Mid-Continent Adds Items To Its Specialty Line

TULSA—Three new items have been added to the line of specialty and automobile accessory merchandise of the Mid-Continent Petroleum Corp. The three are seat cushions, bug screens and sun glasses.

The purpose of the seat cushions is to keep the motorist cool and comfortable during hot weather, and to keep clothing clean and fresh. The company states that additional uses can be found on home and office furniture, and as cushions at ball games and picnics.

The sun glasses are packed in individual cartons, printed in three colors. Display cards are available to provide a pleasing display of this merchandise to motorists. The company points out that summer is not the only season of the year in which sun glasses may be sold, and that they may be used in sun bathing, golf, baseball, and in deflecting snow-glare in winter.

The bug screen for the radiator is made of galvanized wire cloth of fine mesh. Eyelets are installed for spring clip fasteners, and the screen can be put on or taken off in 30 seconds, it is said. The company recommends an initial stock of 50 screens of assorted sizes. With such an order, a display rack is provided free.

New Lubrication Chart By Socony-Vacuum

A new and novel type of passenger car lubrication chart, which combines detailed information and instructions for the lubrication of every part of the 1937 passenger cars, as well as pictorial representations of the various car parts, has just been issued by the Socony-Vacuum Oil Co.

In describing the new chart, E. F. Hallock, manager of the company's automotive engineering department, stated: "The new chart is adapted to modern lubrication practices. It is based on the principle that the various parts of modern automobiles can be classified under a number of specified types, and that these types can be grouped according to lubrication requirements."

Each type of generator, steering mechanism and water pump, together with all other parts requiring lubrication, is pictorially represented with cut-away illustrations, showing the point of application and the path of the lubricant, as well as the type of lubricant to be used.

These illustrations are keyed to a chassis diagram in the center of the chart so that the location of each part may be readily determined. The attendant is instructed as to what lubricant to use, the function of the lubricant in the unit in question, and why that particular lubricant is required.

Each of the illustrations is also keyed with a detailed tabulation of recommendations at the top of the chart, listed in columns according to the make of car being serviced. Listed under each make of car are two columns of key letters and numbers. One column refers to the type of lubricant recommended and the other to the cut-away illustration and explanation to be followed in applying the lubricant.

A sliding individual car guide with slotted window helps the attendant and customer to get a clear view of the lubrication recommendations and key to the illustrations listed in the various columns under each make of car. The guide is placed over the name of the car to be serviced and the recommendations show through the slotted window.

A similar type of picturized lubrication chart has been prepared by Socony-Vacuum for trucks and buses, which is claimed to be "the only chassis lubrication chart issued for the guidance of service station personnel in the lubrication of motor trucks and motor buses."

ADVERTISING PAGES REMOVED

Oldsmobile Introduces Automatic Transmission For "Eight"

DETROIT, June 5 "DOWNTOWN engineers," of which Detroit has many, are knee-deep in gratification because of Oldsmobile's recent announcement of an automatic transmission as optional equipment (at slight extra cost) on its eight-cylinder model.

The feeling was quite strong among the predictors that the introduction of the 1937 cars would see a representative increase in the users of automatic transmissions, but the predictions did not jell. However, the trend is definitely in that direction, and 1938 should see a larger following. The problem seems to be in getting a workable and fool-proof design, and one that will skirt the present patent situation without falling in. The new Oldsmobile automatic transmission, which, incidentally, will be offered as optional equipment at extra cost on both the Six and the Eight for 1938, provides four, instead of the conventional three forward speeds, and selects them automatically through a device actuated by oil pressure and by engine speed. The unit cannot be installed as a replacement for standard transmissions on Oldsmobile Eights already in service, according to the company announcement.

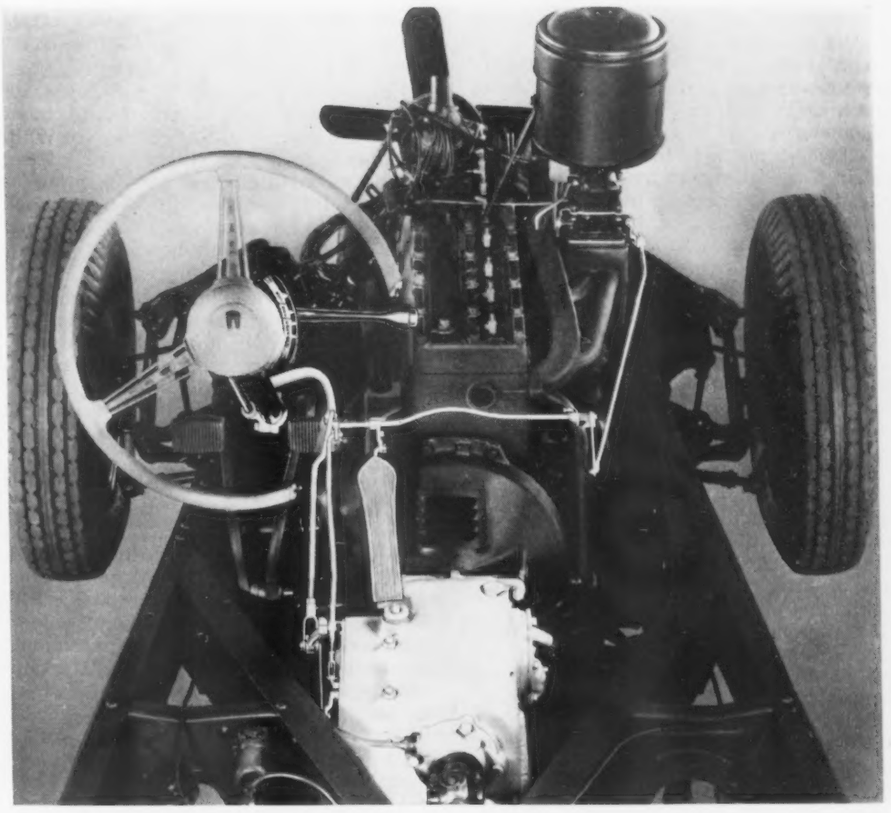
This new automatic transmission unit consists primarily of two planetary gear sets which replace the conventional forward speed gears. These gears are placed in series, or one in front of the other, so that the power from the engine may be transmitted through either or both of the gear sets. This arrangement makes possible several combinations of gears and provides the four forward speeds.

Use of the foot clutch pedal is necessary only when going into reverse, or when starting from a full stop. The transmission is controlled by a short lever located below the steering wheel and extending from the steering post to a point just below the right side of the steering wheel rim.

The driver can move this lever from its neutral position into either one of two forward ranges of gears, designated as "high" and "low" ranges.

The automatic selection of the most efficient gear for each speed is controlled by a centrifugal governor incorporated into the transmission which controls the shifting mechanism. The shift from one gear to another is accomplished through hydraulically-operated pistons that control brake bands on the planetary gear sets and clutches within the planetary units.

The oil pressure which operates the gear shifts is built up by a special pump within the transmission case and has no connection with the engine lubrication system.



View showing the steering column control lever and the new automatic transmission now available as optional equipment on the Oldsmobile Eight

The "low" range includes first and second gear. The "high" range offers first, third and fourth, the first gear being provided in both ranges in order that the driver may, if desired, start in the "high" range when the motor is warm, or when the start is not made up a grade. When starting in the "low" range, the driver depresses the clutch pedal, moves the control pedal to the proper point and releases the clutch. As the car picks up, the transmission changes automatically to second gear. Without declutching or releasing the accelerator, the driver then flicks the control to "high" range, and the gears automatically progress on through third and into fourth.

When starting directly in the "high" range, similar procedure is followed, except that the gears automatically progress from first to third to fourth. The change into fourth is made at a road speed of 22 miles per hour.

Oldsmobile states that the fourth speed is not an "overdrive," but a special direct drive providing an extremely low ratio of engine speed to road speed, for which a fuel saving of 18 to 20 per cent is claimed. At 60 miles per hour the Oldsmobile Eight engine with the automatic transmission fourth gear turns approximately 2500 revolutions per minute, while the engine with average conventional transmission turns over about 3100 revolutions per minute.

Lubrication Requirements

Oldsmobile recommends that engine oil be used in the automatic transmission, following the same specifications set for crankcase oil, as follows: An SAE 30 engine oil for summer temperatures above 40 degrees F., for winter, an SAE 20 oil between 50 and 30 degrees; 20-W between 50 and 10 degrees; and 10-W between 30 and —10 degrees.

It is recommended that the automatic transmission oil level be checked after the first 5000 miles and every 10,000 miles thereafter, adding oil when necessary. The automatic transmission case oil capacity is 3 quarts.

Gear Ratios

In first gear, the ratio is 11.22 to 1; in second, the ratio is 7.91 to 1; in third, 5.03 to 1; in fourth, 3.55 to 1; and in reverse, 11.38 to 1.

Automotive NOTES AND COMMENTS

By **JOHN W. THOMPSON**
N. P. N. Staff Writer

From time to time the oil and automotive industries have been known to stand at opposite ends of the lot and throw well-ripened verbal tomatoes at each other. Usually these barrages of oral vegetation are hurled in largest quantities at about the time the new car models are introduced.

You are familiar with the difficulties of more recent months. The old question of which came first, the chicken or the egg, is somewhat akin to the similar question of which came first, the cadmium silver bearing or solvent refined oil. At any rate, in some annoying instances the oil upset the digestion of the bearings, or vice versa, with the result that some rather corrosive words were passed back and forth.

Then came the hypoid, but not the dawn. Following the announcement by some prominent car manufacturers that oil companies couldn't possibly put their hypoid lubes in these cars until thoroughly approved by the car engineers, oil company representatives personally rushed their sample bottles of lubricants to Detroit where, slowly but surely, the test wheels turned. After many pros and cons, accompanied by the throwing back and forth of the ripe tomato, quite sizable approved lists of these "lubes" displayed by automobile and oil industries alike.

At this moment the automotive banquet speakers are showering praise on the oil industry for its excellent job of manufacturing and distributing hypoid lubricants. But if you will look behind the speakers, you will find the fingers of one hand crossed, and the other hand clutching a ripe tomato.

And why not, when you consider that there are still cases where service station dealers will sell fibre grease or 600W for a hypoid axle.

* * *

C. M. Larson, of Sinclair, unwittingly supported this department's contention of many months when he recently told the S.A.E. tractor group at Peoria that "we are getting out of the cast iron age in oils and into the alloy stage".

There are many indications that the straight mineral oil is in its last cups as a lubricating medium, and that in its place will rise an "oil" that is a combination of inhibitors, oiliness agents, and an oil of pure hydro-carbons.

The reason for this is, of course, that the oils in the future will require these "crutches" to stand up under the constantly increasing engine bearing pressures. Along this same line of thought, some engineers are predicting that extreme pressure crankcase oils are not far away. There are others, however, who believe there is still much that can be done to lower engine temperatures before resorting to e.p. crankcase oils.

In Canada, the McColl-Frontenac Oil Co. is advertising its "Claralloy" and, according to one of the advertisements, it is a "super-refined chemical whose discovery marks the most advanced development in extreme pressure lubricants". This agent is claimed to triple the film strength of the finest mineral oil; to make it cling more closely to metal surfaces; and to create an increased oiliness which gives adequate lubrication under all operating conditions. In other words, an extreme pressure crankcase oil.

But, let not your soul be comforted, for G. L. Neely of the Standard of Cal., recently told the assembled SAEeeeeeees at White Sulphur Springs, that it is a simple matter to find an addition that merely improves oiliness. But, confides Mr. Neely, friction and wear do not necessarily correlate, and high oiliness does not necessarily result in low wear.

All of which means that it is possible to build up an oil to resist higher bearing pressures, but when so doing you may very likely be increasing the wear on the bearings. So when you think of making an e.p. crankcase oil you must be able to include oiliness as well as low wearing properties; that is, you must if you want to believe what your advertising department will say.

* * *

A General Motors executive recently told this "writer" that the American motorist does not use his car, he "wears" it; which is simply another way of saying that style and design are of paramount importance. It is apparent that the continuing attempts to make cars lower, then still lower, will not only increase the use of the hypoid axle, but will force designers to the point of developing other lowering methods.

Already, more than one car manufacturer is toying with the hour-glass type of worm drive for the rear axle. This design permits the drive pinion to contact the ring gear at its lowest point, thus allowing the drive shaft to be dropped still lower than is now possible with the hypoid construction.

Oopsie daisy! Just a test to make sure your new Oldsmobile can take it when you decide to pass a truck on a hill

Then, of course, the rear engine car will be introduced at about that time, automatically answering all of the questions on body lowering, and, of course, bringing up an entirely new set of problems.

Pass me a grey toupe, Beulah.

* * *

The tourist trailer may be a trailer to you, and to the trailer manufacturer it may be a leader, but to the car manufacturer it is something of a headache.

In spite of the fact that the trailer industry has grown by "leaps and bounds", James M. Booth of the Buick Motor Co., in speaking before the S.A.E. at White Sulphur Springs recently, pointed out that there is not sufficient volume to warrant car manufacturers producing a special design to handle these land yachts.

Booth says that every additional 100 pounds of weight is a nightmare for the car designer, and when 2500 pounds or more of trailer are suddenly added to his problems, it can readily be seen that he is experiencing some restless nights.

Booth points out that to buy a car and convert it into a 20-passenger bus is similar, except for static load on the chassis, to buying the car and pulling a trailer behind it. The load on engine, clutch, transmission, drive shaft, differential gears, and axle shafts, is the same for 3000 pounds, whether the load is 20 passengers of 150 pounds each or a 2500-pound trailer with two car passengers and 200 pounds of baggage.

The proper type of hitch is important, according to Booth, as well as six-ply tires and extra spring leaves in the rear of the car. Cooling of the engine is also mentioned as a problem requiring further investigation where trailers are concerned.

In a fuel economy test, using six cars with trailers, Booth found that the average added fuel consumption of these units when pulling trailers at 20 miles per hour was 3.8 miles per gallon. At 30 miles per hour, the added fuel consumed in pulling the trailer was 4.7 miles per gallon. At 60 miles per hour, the increase amounted to 4.9 miles per gallon.

Which just goes to show that you can have your trailer and sleep in it too, but you can't have your gasoline and trailer too. It certainly does go to show, doesn't it?

* * *

Thirty years ago the Missouri Automobile Assn. offered a suggestion to car owners for allaying the hostility of horsemen whenever the car owners approached a team of horses that gave any indication of taking fright. The advice was as follows: "Drive to one side of the road, and if possible hide the machine behind a clump of trees; then emerge gently, take the bridles of the horses and lead them past the automobile. Then give the farmer a cheery slap on the back and a hearty 'jolly' that

GOODYEAR WINS SEVEN YEAR WAR!

AMAZING NEW YKL TRUCK AND BUS TIRE CONQUERS INTERNAL HEAT . . .

Promises Great Economies on the "Murder Runs"

A war against heat!

A war against the deadliest enemy truck and bus tires have ever faced!

A war waged to curb the costly destruction of tires on the "murder runs"!

For seven years, Goodyear engineers have fought that war.

Today they stand victorious following one of the most spectacular achievements in the entire history of the rubber industry—the perfection of the New Goodyear YKL—built of Rayotwist cord.

Internal heat, in its attack on tires, has two powerful allies—tremendously large loads and the increasingly high speeds at which these loads are carried.

No conventional tires have been able to resist the internal heat created by heavy loads carried at sustained high speeds on the "murder runs". For years a super-tire has been sorely needed.

Goodyear engineers won their seven year war against heat only after they had found a new material for spinning yarn, evolved a new technique for twisting the yarn into tough, strong cords and perfected a new process with which to bind the cords to the rubber compound.

The material is Rayotwist. It is made from a special rayon with a tensile coefficient much higher than that of ordinary commercial rayon. Filaments of Rayotwist, very fine in texture, are spun into cord.

The process used to bind cord and rubber is a secret bath—now patented and owned by Goodyear.

When the Goodyear YKL was completed, southwestern deserts became the scene of the fiercest series of tests to which any tire was ever subjected.

There under a blazing sun, carrying back-breaking loads at terrific speeds, the new YKL tripled, quadrupled, even multiplied by five the mileage of conventional tires.

The seven-year war had been won. The world had its super-tire.

A section of the interior of an ordinary cord tire burned out and broken in fast, heavy-duty travel.

A section of a YKL Tire with the same number of miles at the same speed and under the same heavy load.

CAUTION!

Goodyear engineers now recommend the new YKL Tire only for the most destructive types of service—those "murder runs" over long distances at sustained high speeds.

In ordinary trucking, its extraordinary capacities cannot be fully utilized—and, frankly, its higher price cannot be justified.

But for operators of trucks and busses on "murder runs," Goodyear recommends the YKL Tire with full confidence in its ability to set new and spectacular performance records—to effect great savings as compared with the cost of conventional tires.

Such operators are invited to write direct to The Goodyear Tire and Rubber Company, Inc., Akron, Ohio, for full particulars.

The New YKL MADE WITH RAYOTWIST

GOODYEAR
TRUCK AND BUS TIRES

CAPSTONE
HYPOID
GEAR LUBRICANT

— APPROVED —

LEAD BASE — ACTIVE SULPHUR

No Separation during storage or while in use under extreme heat.

HIGH LOAD BEARING—MINIMUM FOAMING

Put up especially for the Jobbing Trade in 55 gal.—15 gal. steel drums—5 gal. pour pails to be sold under our Brand or Your Own Re-brand.

LOW PRICED

WRITE FOR SAMPLE

MANUFACTURED BY

CAPSTONE MANUFACTURING CO.

HIGH GRADE LUBRICATING GREASES SINCE 1912

ROANOKE AVENUE **NEWARK, N. J., U. S. A.**

FREEDOM offers 4 "Big Name" Oils

Fort Pitt, Beaver-Penn, Four-State and Penn Trump Motor Oils stand right at the top among the aristocrats. As 100% Pure Pennsylvania Grade Oils, they have built fine reputations for scores of jobbers and they have turned in some excellent profits. Your territory may be open for exclusive sales rights. Write today for information.

REFINED FROM 100% PURE PENNSYLVANIA GRADE CRUDE

These oils are sealed at the refinery in attractively lithographed cans. They are also available in bulk or they can be packed in jobber's own private brand cans.

THE FREEDOM OIL WORKS COMPANY

FREEDOM, PENNSYLVANIA

will send him on his way feeling that indeed the automobile is the prince of them all".

Tally-ho.

* * *

The administration's program of redistribution of wealth is going to make the automobile industry spew with joy and increased production, according to some high powered crystal gazing done recently by a Detroit statistical service.

If the share-the-wealth program jells, these analysts believe that $10,000,000,000 of the national income will be diverted to the 10,000,000 lowest paid families, and the market for motor cars will be increased by about 3,000,000 units.

Think of the millions of dollars worth of gasoline, oil, tires, batteries, and accessories that these additional cars represent, and which will be lost by busy service station dealers who are down at the Elk's Hall demanding more margin.

* * *

You didn't know, did you, that only 9,000,000 car owners of the total of 28,000,000 ever purchase new cars? The majority of owners buy the cars that are broken in by the 9,000,000 new-car buyers. That should give somewhat of an idea of something or other.

* * *

It has been pointed out that the automobile is a "soda water" plant. Two of the exhaust products, water and carbon dioxide, if cooled and mixed would make soda water. With an ice cream freezer attachment and a chocolate syrup dispenser, the advertising boys might have a sales point there. After all, there might be some appeal to the line—Drive a Whoofle and Enjoy a Chocolate Soda Attachment".

* * *

Yellow cars are not sold in China, as that color denotes mourning there. In the U. S., yellow is just a name given to orange colored taxicabs.

* * *

The Ford Motor Co. has recently approved a two-speed overdrive axle for optional factory installation on the new Lincoln-Zephyrs, and it is understood that these axles are also available on the present Fords.

Neil S. Lincoln, of the Columbia Axle Co., is of the opinion that the overdrive will be one of the chief features offered on the majority of the new models. And to back up his belief, he says that three major car manufacturers are dickering with his company for the installation of overdrives on their 1938 models.

Columbia's two-speed overdrive axle gives a fourth driving range and six forward speeds to the car.

A speed for one's every mood, sort of.

* * *

It has been wisely said by Chief Pontiac, self-styled philosopher of the Pontiac Motor Car Co., that it takes about 1500 nuts to hold an automobile together, but it only takes ONE to scatter it all over the landscape.

NEW EQUIPMENT
And the Manufacturer

Fire Protection

A new and profusely illustrated folder covering the engineering features of Lux carbon dioxide fire protection has been released by Walter Kidde & Co., Bloomfield, N. J. The booklet's title is "108 Extra Values." A pamphlet entitled the "Elements of Fire" has been prepared also as a general treatise on fire protection for the use of safety engineers. It treats on the many chemical aspects and physical characteristics of fire, with emphasis on proper protection.

* * *

With the introduction of the Brookins Hypoid Gear Lubricator for dispensing Hypoid Lubricant in one, two, and three-pound cans, Cincinnati Ball Crank Co. offers a fitting companion. Now available is the Model 140, which enables the efficient and profitable lubrication from Hypoid Lubricant in bulk. This dispenser, while primarily designed for Hypoid Lubrication, can also be used for dispensing gear lubricants in general. Finished in baked enamel, it adds greatly to the

Model 140

beauty and efficiency of the station. Hand operated and portable, it includes an accurate meter, an exclusive Balcrank patented foot-valve, which eliminates all air in pump and assures accurate measure, a 5½-foot sturdy hose and an anti-drip nozzle for station cleanliness. Where 100-pound drums are used, a model 145 has been designed. It consists of a pump, meter, 5½ foot of durable hose, anti-drip nozzle, and cover which is held securely to drum with three clamps.

* * *

Buys Power Piping

The Blaw-Knox Co. has acquired the property and business of the Power Piping Co. of Pittsburgh. The Power Piping Company was organized in 1916, and has been engaged in the design, manufacture, and erection of piping for power plants, oil refineries and industrial plant usages for all pressures and purposes.

The business will now be operated under the name of "Power Piping Corp." William V. Quartz will continue in charge.

"SURE STARTING, WHETHER IT'S HOT AS BLAZES OR 30 BELOW"

Specify

The G-E Capacitor-Motor for Gasoline Pumps

MR. EXECUTIVE — *This motor will lower repair and maintenance expense.*

MR. ENGINEER — *It is adaptable to any gasoline pump.*

MR. SERVICE MAN — *All this motor requires is oiling once a year.*

MR. Operator knows—because he uses them—that G-E capacitor-motors give instant service under extreme operating conditions. And his opinion is backed by that of more than a million satisfied people who have G-E capacitor-motors on their refrigerators, stokers, and water pumps.

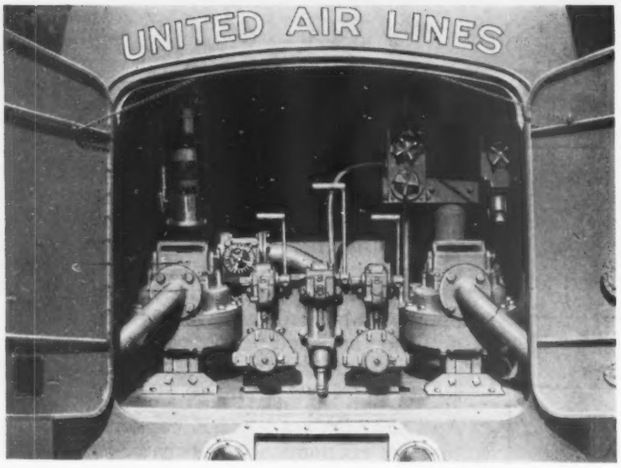
And that isn't all—G-E capacitor-motors are economical to operate. For example, the rotor is indestructible; the stator windings are resistant to moisture, oil, and mild acids and alkalis; and neither commutator nor brushes are used.

Reliability, quietness, and economical operation are equally desirable for other gasoline-station applications requiring a high starting torque. Why not use G-E capacitor-motors on your station air compressors? For additional information ask for Bulletins GEA-2277 and GEA-977C. Contact the nearest G-E sales office or write General Electric Company, Dept. 6A-201, Schenectady, N. Y.

Built by Men Who Know Motors, for Men Who Know Pumps

070-188

GENERAL ELECTRIC



REAR END CABINET—Houses Two Hydrafold Operators, Hydrafold Emergency Valve Operator, Switch operating Strip Heater, Three Heat Control Switch for operating Immersion Heater in Lubricating Oil Compartments, Two Bowser Meters and Fire Extinguisher.

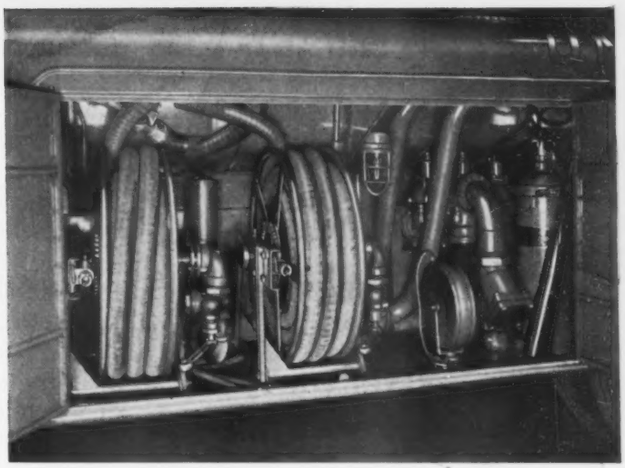
When United Airlines put their new Mainliners on regular schedule, aviation took another great step forward. These luxurious "ships of the air" glide easily and swiftly from coast to coast. With their flying schedule figured down to minutes, refueling and service to the planes has to be amazingly fast, yet absolutely accurate. To FARRELL Modernized Truck Tanks is given the all important assignment of handling fuel and oil.

All equipment used in these De luxe Models has been designed to add greater operating convenience and speed. Lines and cabinets have been insulated to reduce fire hazards. Tanks have total capacity of 2100 gallons and are of FARRELL Flexible Unit Construction. These are but a few of the many features but they give some

SPECIFICATIONS. . . . .3 Pumps—100 GPM size, controlled by Dry Disc Clutches, operated by 2 power "takeoffs" run off of transmission, units can be run any combination. Tank—capacity of 2100 gallons, Flexible Unit Construction, all compartments fully insulated and equipped with heaters, switches in rear Bucket Box control current and heaters, Vapor Proof lights in each cabinet, Ignition Switch in rear box, 3 Hose Reels equipped with 50 feet of 1½" gasoline hose, 1 Hose Reel equipped with 50 feet of 1¼" Oil Hose. Tank painted and lettered as shown.

Servicing the MAINLINERS

idea of what **FARRELL** can do for you. Whether your need demands one small capacity tank or a fleet of giant trailers, **FARRELL** gives you individual construction backed by years of experience as producers of bulk haulage equipment.



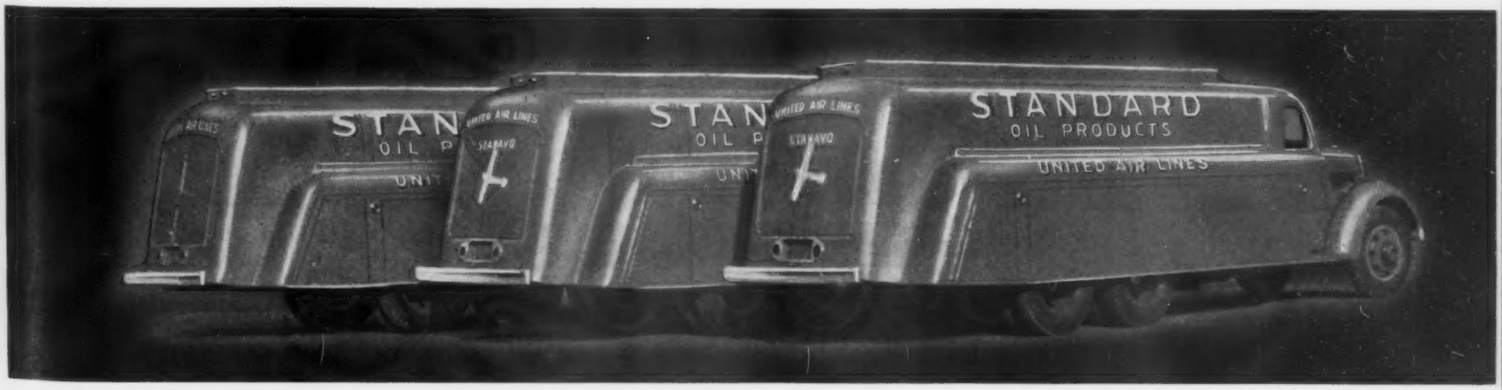
LEFT FRONT SIDE CABINET—Houses a 3″ line having a 3″ line strainer, leads from three valve Hydrafold to left hand Pump under Chassis, Two Gasoline Discharge Reels—each with 45 feet of 1½″ Hose, and 30 foot Bonding Cable and Reel.

FARRELL MANUFACTURING COMPANY

JOLIET, ILLINOIS

District Sales Offices:

Chicago Cleveland Detroit New York Philadelphia



The nationally advertised Sinclair H-C Gasoline and Sinclair Opaline and Sinclair Pennsylvania Motor Oils head a complete line of high-grade petroleum products which includes:—

LUBRICANTS— for automobiles, trucks, tractors and farm equipment.

FUELS— Gasoline, Kerosene, Range Oils, Fuel Oils, Diesel Oils.

INDUSTRIAL LUBRICANTS— 100 specialized products covering lubrication requirements for all types of machinery.

RUBILENE OILS— for Diesel and gas engines, stationary and marine turbine lubrication.

SINCLAIR TEN-OL— an outstanding new Diesel engine lubricant for "Caterpillar" Diesels, which increases service hours ten times between overhauls.

SPECIALTIES— P.D. Insect Spray, Sinclair Stock Spray, Naphthas and Solvents, Soap, Household Oil, Automobile and Metal Polishes.

Distributors, jobbers and dealers are invited to 'phone the nearest Sinclair office or write Sinclair Refining Company (Inc.), 630 Fifth Avenue, New York City, for full details about the value of the Sinclair franchise.

SINCLAIR

A consumers' "co-op" service station in Columbus, Ohio, operated by the Columbus Consumers' Co-operative. In addition to a complete line of petroleum products, this station also sells groceries and handles buying orders for members on other types of merchandise

The Oil "Co-op's" Economics— And Its Future . . .

By THOMAS J. QUINN, *Economist*

THE consumer co-operative has provided a favorite subject for popular discussion during the past few years. This type of outlet is of vital interest to oil men because it has made more marked progress in the marketing division of the petroleum industry than in any other field of distribution. Data compiled by federal governmental agencies show that co-operative selling gasoline, lubricating oil, fuel oil, and other petroleum products account for more than one-fourth of all business transacted by this type of enterprise. Interest was further stimulated by the recent announcement that a group of co-operatives in the mid-west had contracted to accept the entire output of an Oklahoma refinery.

Nearly all articles regarding co-operatives which have appeared in oil trade journals have considered the relative volume of business transacted by these outlets as compared with the older-established channels of distribution in the industry. This article will consider the economic factor which foster formation of co-operatives, and the possibility of their spread in the future.

THE author, a student of the economics of the co-operative movement, carries the reader of this article beyond the purely factual data concerning co-ops. In preparing this material, he places himself in the position of the typical gasoline distributor and presents the answers to such current questions as, "What is the basic reason for the co-operative?" and "Will it spread in the future, or has it reached its point of greatest development?"

Many articles on the co-op movement have pointed out that a certain number of such organizations exist in this country, that they do a certain annual volume of business, and that they possess a certain percentage of the total state gallonage. But here is a treatment of this timely subject that reach toward its foundation. Here you will find many of the factors behind the facts about consumer co-operatives.

Basic Need

During the recent economic depression attempts were made to isolate some of the more significant factors responsible for the uncontrolled expansion which marked the period from 1925 to October 1929, and the succeeding sudden recession in the business cycle. Some authorities propounded the theory of over-production, that is, industrial productivity capacity being extended to such a point that the consuming market was unable to absorb the volume of goods manufactured. Other competent authorities insisted that the basic difficulty was under-consumption. The latter pointed out that over-production was merely the effect, the underlying cause being lack of sufficient purchasing power among the masses to absorb the volume of goods industry was capable of producing.

The Brookings Institute undertook a comprehensive study of this problem during 1934 and 1935 under a special grant of funds from the Maurice and Laura Falk Foundation of Pittsburgh. The results were published in a four-volume work. Facts developed pointed to the under-consumption theory as the more tenable of the two explanations.

The conclusions reached in this study centered attention upon price-reduction as a medium for providing the consuming masses with increased purchasing power. It also pointed to this remedy as an effective method for eliminating from the economic system some of the relatively unstable factors materially contributing to successive recurrence of serious economic maladjustments.

These conclusions are substantiated in facts developed by other reliable sources which show that those industries whose commodities showed the most marked price decline during the depression experienced the least reduction in volume of production. This point is brought out in the figures shown in Table I, which are taken from the February 15th, 1936 issue of the *Congressional Record.*

TABLE I
Comparative Decline in Prices and Decline in Production for Certain Representative Industries During Depression

Industry	Percentage Decline in Prices	Percentage Reduction in Production
Agricultural implements	6	80
Motor vehicles	16	80
Cement	18	65
Iron and steel	20	83
Auto tires	33	70
Textile products	45	30
Food products	49	14
Leather	50	20
Petroleum	56	20
Agricultural commodities	63	6

This table indicates that a direct relationship exists between prices and volume of production. Industries manufacturing products such as agricultural implements, motor vehicles, cement, and iron and steel, which showed less than 20 per cent price decline, experienced a 65 to 83 per cent reduction in volume of production. Food, leather goods, petroleum products, and agricultural commodities, on the other hand, showed price declines ranging from 49 to 63 per cent, but the reduction in volume of production amounted to only 6 to 20 per cent.

Although conclusions developed in the Brookings report point directly to the advisability of price reductions as the most practical solution to the current problem of maldistribution, the report included no specific recommendations as to the manner in which such reductions might be effected.

Certain socially-minded individuals, including Edward Filene, Boston department store owner and operator, believed the consumer co-operative is the medium for attaining this goal. To the impartial observer it appears that these individuals expect co-operatives to provide effective competition with resulting lower prices. They also seem to expect co-operatives to create a consumer consciousness among the masses constituting the chief market for commodities.

It must be noted that the theories of both the Brookings Institute and these individuals are predicated on the assumption that prices of manufactured products may be reduced without injury to the particular industry or business concerned. No attempt will be made to analyze this point, for it is beyond the scope of this article. The point must be emphasized that the consumer co-operative may constitute but one possible approach.

Foreign Experience

Experience with consumer co-operatives in foreign countries has demonstrated their effectiveness in reducing prices. In Sweden, formation of co-operatives has brought marked reductions in prices of such commodities as margarine, electric light bulbs, and galoshes.

A factor was, however, present in this and other foreign countries which is less common in this country. Nearly all of the industries with which co-operatives entered into direct competition were cartels. Formation of such national and international monopolies has undoubtedly been fostered in these foreign countries by governmental encouragement and absence of the solicitous regard for the "little man" so prevalent in the United States. Anti-trust legislation, chain store legislation, and statutes such as the Robinson-Patman Act seem much less common in foreign countries. The high regard in which John Jones, the local grocer, and Jim Smith, the local druggist, are held in this country is evidenced in legislation protecting these individuals from competition of chains and other large enterprises able to offer consumers commodities at substantial savings.

In short, it appears that American consumers are much more keenly interested in equalization of competition as between chains and independent merchants than they are in obtaining savings for themselves. The regularity with which a sizable portion of the population patronizes "local business men" in preference to chain stores offering similar quality goods at lower prices sheds significant light on this problem.

Another factor tending to minimize importance of experience in foreign countries as applied to the United States is the relatively lower standard of living prevalent in these other countries. The great majority of countries in which co-operation has shown marked success possess very limited natural resources. This condition is in most instances directly reflected in low national and per capita income. These comparatively low standards of living tend to emphasize desirability of commodities customarily regarded as necessities in the United States which are, however, looked upon as luxuries in these foreign countries.

The spread of the co-operative movement in European countries is partially attributable to the characteristically frugal nature of the people. Americans who have resided in England, Scotland, or France for any considerable period of time point out that inhabitants of those countries make a general practice of saving a certain percentage of their weekly or monthly income, no matter how small it may be. Another illustration of this frugality is the housewife's practice of carrying a paper bag whenever she goes to the grocery because the grocer charges an additional half cent for the bag.

Americans would be tempted to invest any sum remaining over and above expenditures for absolute necessities in a new automobile, vacuum cleaner, or radio—articles practically unknown to the typical consumer in these other countries.

Another factor which has undoubtedly played a prominent role in evolution of consumer co-operatives in foreign countries is inadequacy of transportation facilities. This factor is cited as one of the chief causes for spread of the movement in Sweden and Finland, sparsely populated countries in which distribution of commodities presents an exceedingly difficult problem because of wide expanses of rural areas, and limited transportation facilities.

Application of business efficiency, development of modern methods for determining and allocating costs, and training of personnel does not appear to have made such marked progress among private enterpreneurs in foreign countries as in the United States. Several authorities have likened the co-operative movement in foreign countries to the chain store movement in this country. Both appear to have made essentially the same contribution to the field of merchandising. One should not be inclined to minimize the resourcefulness of American business men. They have effected modifications and economies in the marketing system which it has been necessary for consumers to inaugurate through co-operative action in foreign countries.

Experience in This Country

The first American co-operatives appear to have resulted from failure of prices of farm supplies and implements to keep pace with the sudden decline in farm prices following the World War. In the early twenties farmers found themselves in the position of paying war-time prices for certain commodities indispensable to farming, despite the fact that they were receiving much lower prices for their crops. This fact is brought out in Table II which shows comparative indices of wholesale prices for farm products, fertilizers, and petroleum products for these years.

TABLE II
Comparative Wholesale Price Indices for Farm Products, Fertilizers and Petroleum Products (1926=100)

(1926 = 100)

Year	Farm Products	Fertilizers	Petroleum Products
1919	157.6	191.8	128.0
1920	150.7	211.6	183.5
1921	88.4	117.6	104.4
Pct. Change			
1919 to 1920	— 4.3	+10.3	+43.0
1919 to 1921	—43.0	—38.0	—19.0

Figures from U. S. Department of Labor.

This table shows that prices of farm products declined 4.3 per cent between 1919 and 1920 whereas the price of fertilizers increased 10.3 per cent and the price of petroleum products 43 per cent. Prices of farm products declined 43 per cent between 1919 and 1921 as contrasted with a decline of 19 per cent in petroleum products and 38 per cent in fertilizers. In all fairness, it should be noted that both of these groups of products showed marked declines subsequently.

This situation forced farmers to spend a much greater proportion of the income from crops for petroleum products and fertilizers than was previously the case. For many farmers, limited income resulting from declining farm prices made a marked reduction in price of supplies mandatory if they were to survive. As a result, they sought to devise methods for reducing prices of these commodities.

Farmers in Ohio were able to purchase a small fertilizer plant, in which they undertook manufacture of fertilizer and sale to members of the co-operative at cost. Operation of this plant enabled members to effect sizable reductions in price of fertilizers. It was soon discovered that fertilizers to meet the varied needs of different farmers throughout the country could be manufactured to specification at little additional cost.

Wide Retail Margins

To the farmer, petroleum products are necessities. Considerable amounts of gasoline, lubricating oil, and diesel fuels are consumed in operation of tractors, stationary power plants, automobiles, and trucks. The extraordinary demand for petroleum products during the World War forced their prices to unusually high levels, at which they continued for some

LOCAL BOY MAKES GOOD ADVERTISING!

Like others that have preceded it, this local newspaper advertisement plays up the Conoco Mileage Merchant as an individual home-town retailer. It makes good advertising—for Conoco Dealers and for Conoco Products. It is typical of Continental's progressive plans for merchandising and selling, every detail of which is *from the retailer's standpoint.* Let a Continental salesman tell you about the many other ways this Company helps its dealers get business and make profits. CONTINENTAL OIL COMPANY.

Potato Contr
As Typical
Mark Sullivan Poi
and Farmers Pla
Prices Rose Fi
By Mark Sulliva
WASHINGTON, Aug. 13
potatoes. It was said that too many
potatoes had been planted already
and that in the season then ahead
more yet would be planted—the price
would be disastrously low.
Well, the control law never prevented the planting of any potatoes, for it was repealed before the planting season began. The quantity of potatoes planted last spring was just as much as farmers chose to plant.
And now as to price: The price of potatoes a year ago, on August 15, 1935, was 81 cents a bushel. The price today is 81.41 a bushel.
Under the potato control law every farmer raising potatoes for sale was required to first get a permit from the Federal government. (There was an exemption for farmers raising less than five bushels.)
The Federal government, through A. A. A., was to dictate for each farm how many potatoes could be raised and sold—each farmer was given a quota.
Provided Heavy Penalties
Any farmer raising and selling more than his quota was to be penalized by a prohibitive tax of 45 cents a bushel. Any farmer raising and selling without a government
Luciano Starts Fight to Get Out Of Dannemora
Seeks Freedom Writ, Contending Consolidation of Vice Counts Was Illegal
By The Associated Press
PLATTSBURG, N. Y., Aug. 11.—
Charles Luciano, convicted in the vice trials in New York City recently, began a fight today to get out of prison when his lawyer, James Noonan, of Albany, filed a petition for a writ of habeas corpus with County Judge Thomas F. Croake.
Judge Croake granted the petition, and directed the warden of Clinton prison at Dannemora to produce Luciano in court for a hearing on Monday, August 24.
Sheriff Rudolph La Chapelle went to Dannemora, about eighteen miles away, and served the court order personally on the warden. The warden's office said it was not the procedure for officials to notify Luciano, but he would probably be informed of the serving by his attorney.
Luciano is working in the prison laundry.
Luciano was convicted on sixty-two of ninety counts of an indictment charging compulsory prostitution in connection with a chain of disorderly houses in the New York area.
Cites Date of Vice Amendments
Mr. Noonan contended that amendments to vice laws did not become effective until April 9, 1936, whereas the criminal acts charged to Luciano occurred before January 31, 1936.
The particular amendment used as the basis of Mr. Noonan's argument is Chapter 328 of the laws of 1936 (Section 279). Chapter 328 permits a district attorney to consolidate indictments against defendants to avoid delay in trials.
On this point, Mr. Noonan stipulated:
"Section 279 of the code of criminal procedure as amended by Chapter 328 of the laws of 1936, effective April 9, 1936, is ex post facto and unconstitutional as to each and every act charged in each and every count of said ninety counts of said indictment."
Assails Consolidation of Counts
Thus the lawyer contended that consolidation of indictments as pertaining to his client was unconstitutional. The general question of unconstitutionality was not raised, but the way is left open to make such a claim.
The special law attacked by Mr. Noonan was passed by the Legislature several months after crimes charged to Luciano were alleged, Mr. Noonan contends. The new law was enacted by the last 1936 Legislature, after Special Prosecutor Thomas E. Dewey, investigating New York City vice on order of Governor Herbert H. Lehman, had requested such a statute.
Luciano was sent to Sing Sing for thirty-five to fifty years with several men accused as underlings in the "vice racket." Later, Edward P. Mulrooney, Commissioner of Corrections, ordered the men separated, and Lu-
Hughes Denies Plans To Fly Around World
Airman-Producer Here After Flight From Dayton
Howard Hughes, motion picture producer, oil man and sportsman pilot, brought his "flying laboratory" down on Floyd Bennett Field at 10:20 a. m. yesterday after an unheralded four-hour-and-five-minute flight from Dayton, Ohio, where it was rumored Monday night when he arrived non-stop from Los Angeles that he was preparing for a round-the-world flight.
Early last night, in New York, having caught up on some lost sleep and having read several speculative stories about his plans to fly around the world or participate in next month's Bendix trophy race from New York to Los Angeles in conjunction with the National Air Races, Hughes issued a denial through Albert I. Lodwick, one of his five companions on the trip from California, that he intended to do either thing. It also was denied that he would fly to South America but Lodwick said Mr. Hughes was interested in a program involving experimental long-range flying on this continent.
Mr. Hughes's ship is the same Cyclone-motored Douglas low-wing monoplane with which El W. Tomlinson, test pilot and executive of Transcontinental and Western Air, Inc., established a series of world records in the speed-with-load category here more than a year ago. Mr. Hughes's companions on the flight from California in addition to Mr. Lodwick, who is publicity representative of the Curtiss-Wright Corporation, manufacturers of the "flying laboratory's" motors, were Harry Connor, who acted as navigator on two trans-Atlantic flights; W. C. Rockefeller, meteorology instructor at the California Institute of Technology where Hughes was educated; Richard Stoddard, radio operator, and Ed Lund, mechanic.
Drill Train Conductor Killed
Car Jumps Track, Topples Over, Pins Him Against Girder
ORANGE, N. J., Aug. 11.—John J. Parrell, forty years old, conductor of a ten-car drill train of the Lackawanna Railroad, was killed this afternoon when a refrigerator car, the last of the train, jumped the track between Millington Place and Commerce Street, while making a flying switch.
The car fell onto its side and, hanging from the coupling with the ninth car, lay at the top of a thirty-foot embankment above the siding of the Langton Coal Company. Parrell, who was riding on the roof of the refrigerator car, was jammed against a heavy steel girder carrying high tension wires. The girder was bent and the wires snapped. Traffic on the main line was not affected by the accident. Parrell lived at 18 Dog on which Carberry's money rode won the race, according to Mr. Weinstein, and the patrolman tried to exercise his options.
After being directed to several persons, Mr. Weinstein said, Carberry was referred to the racing secretary's office where he was told that the dog would
East Orange Police Seek
ughlin and Allies Expected
o Center Attack on Roosevelt
Sullivan Notes Opposition to Communism, ens Groups to Religion's Fundamentalists and Says Combination May Have Much Effect
By Mark Sullivan
SHINGTON, Aug. 11.—On Friday s week, at Cleveland, will occur nvention of the National Union ocial Justice. This is Father lin's organization. In the Presi- al campaign this organization not stand alone. It is geared some kind of informal co-operawith three other movements. The r three are the Townsend organi- n, the old Huey Long "Share-the- lth" movement, which is now ap- ntly led by the Rev. Gerald L. K. th, and finally the Union Party. ch is a formally organized third ty with a candidate for President the person of Representative Wilam Lemke, of North Dakota.
In the working arrangement in which these four are united, there are intricate exceptions. The Townsend movement at its recent Cleveland convention was not willing to go so far as to indorse Mr. Lemke, the Union Party candidate for President. Father Coughlin seems to indorse Mr. Lemke, but stops short of formally uniting with the Union Party. Father Coughlin says, "We are supporting
therefore is a more shining mark. Also, Father Coughlin, the Rev. Mr. Smith and Mr. Lemke all supported Mr. Roosevelt in his campaign for the Presidency in 1932. All three feel that Mr. Roosevelt has disappointed them —the word they use is not "disappointed" but "betrayed."
It is going to be Mr. Roosevelt that these leaders will most bitterly attack. And it is from Mr. Roosevelt that they will take most of the votes they get for their new party. It is difficult to imagine many voters who, if the new party did not exist, would otherwise vote Republican.
This statement is subject to some qualification. Within the Townsend movement are many persons who are traditionally Republican, and who, if the Townsend movement did not exist, would probably vote Republican. Also, the program of the new party includes a way of making mortgages easier to pay. This may appeal to some harassed farmers and others who in the past have been Republicans. Yet, even in respects this point, these harassed farmers would probably be for Mr. Roosevelt if Mr. Lemke did
MY OWN SUCCESS STORY
Giving people more mileage
RECEIVING
CONOCO
I like people to know that I'm not just hired at my station. I'm the proprietor, making my living, all on my own. Naturally I'm choosey about anything I recommend, so no matter how close you might check whatever I say about mileage and performance, I can always look you square in the eye. And that goes double for my Conoco Germ Processed oil. It is the only kind that ran Oil-Plate your engine. The patent Germ Process, you might say, gives this oil a real strong "yen" for metal. The oil actually joins up with every working part, always leaving a durable, slippy Oil-Plating that cannot run down, whether your car is stopped or hitting it up. Then you can start up a thousand times a day, or streak along from morning till night. But Oil-Plating will still be there, heading off wear and letting you skip a lot of stops you used to make for oil. You'll be back here saying even more than me, about all your mileage and performance from Conoco Germ Processed oil.
CONOCO GERM PROCESSED OIL
CONOCO
from Your Mileage Merchant

time.

The retail margin in the handling of petroleum products was wide at that time. In a new and growing industry there is always a tendency to offer attractive margins in order to encourage retailers to undertake distribution of the product. The unusually large productive capacity of the petroleum industry developed during the war had this effect upon dealer margins. This factor undoubtedly contributed to the formation of gasoline co-operatives.

The direct effect of margins in encouraging formation of co-operatives was brought out strikingly in a study conducted by the Marketing Division of the Petroleum Administrative Board, the agency entrusted with administration of the code under the National Industrial Recovery Administration. This study showed that a marked increase occurred in the number of oil co-operatives under the code, and that there was also an appreciable increase in volume of business transacted by co-operatives in existence before inception of the code. An additional contributing factor to the spread of co-operatives was undoubtedly the unusually favorable competitive position enjoyed by co-operatives under the code. They were permitted to grant rebates to members, whereas individual dealers were prohibited from granting customers price concessions of any type.

The obverse of this condition has been in evidence since inauguration of the Iowa plan. In certain instances, dealers have adopted the practice of granting consumers rebates in order to obtain additional business. The resulting narrowing of margins tends to impose definite limits upon the co-operative's competitive advantage. Competent observers testify that co-operatives have experienced serious competition since inauguration of the Iowa plan.

Cost of Distribution

One of the chief factors contributing to formation of consumer co-operatives in farming areas has been the sizable cost involved in distribution of manufactured products to farmers. This statement should not be interpreted as implying that farmers are charged exorbitant sums for this service.

Retail distribution to the farmer presents an exceedingly difficult and costly problem. In many instances, transportation costs represent a sizable portion of the price which the farmer pays for products. Definite evidence indicates that certain distributors failed to satisfy the farmer's needs because of lack of adequate study of his requirements. Petroleum marketers, for example, were providing farmers with super-service comparable to that offered consumers in cities and other densely populated areas. The typical farmer is unquestionably more interested in the ultimate price of gasoline and lubricants than he is in this extra service.

Farmers discovered that they might pool their purchases through the medium of a co-operative buying society, purchase commodities and supplies at wholesale prices directly from the manufacturer, and thus effect a saving representing the retailer's margin and in certain instances the jobber's as well. Quantity buying also entitled them to special discounts. Purchase of farm supplies easily lends itself to quantity buying because these products are usually handled in bulk. They may be loaded directly into the farmer's truck from a freight car on a nearby railroad siding. The farmer is, therefore, able to reduce transportation costs as well as effect other marked savings attributable to mass purchasing and other peculiar factors inherent in buying of farm supplies.

Lag Between Prices and Wages

An extremely important factor which has materially aided formation of heating oil co-operatives among working-class and white-collar groups is the spread between prices and wages. It is a well-known economic maxim that wages and salaries decline more rapidly than prices during a period of depression, and increase more slowly than prices during a period of economic expansion. When the margin between the two becomes sufficiently marked—which is commonly the case during the early stages of depression—wage earners and white-collar workers are forced to seek means for eliminating this spread between income and outgo. Consumer co-operation provides one effective method. The relatively higher standard of living enjoyed by the working groups in this country, to which reference has already been made in another connection, however, tends to counteract this tendency to a certain extent.

The Future

This analysis indicates that no startling developments may be anticipated in the field of consumer co-operation in the immediate future unless radical changes occur in economic conditions. One of the

You can tell a *Thoroughbred* at a glance, just as the *Thoroughbred* Performance of Cushing Petroleum Products quickly satisfy motorists and bring YOU increased profits. Write, wire or phone for quotations.....

The COMPLETE Line!

VRITE, WIRE OR PHONE FOR QUOTATIONS
CANNON BALL SERVICE

Cushing Ethyl Gasoline
Cushing Anti-Knock Regular-Leaded
Anti-Knock Pressure 400 End Point
60-62 Better than U.S. Motor
60-62 Under 400 End Point
64-66 Under 375 End Point
68-70 Under 360 End Point
42-44 W.W.D.T. Kerosene
38-40 Light Straw Zero Distillate
32-36 Overhead uncracked Gas Oil
Cracked Fuel Oil

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Refining & Gasoline
COMPANY

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chief factors contributing to formation of co-operatives, as has been shown, is a wide spread between income and outgo for any particular consuming group. This is reflected in the spread between prices for farm supplies and prices for farm products. It is also reflected in the lag between commodity prices and workers' wages. Another contributing factor is wide margins.

Any modification in the economic system tending to create these conditions might provide an impetus for spread of co-operative movement. This would be true of inflation, for example. Under inflation, prices tend to rise much more rapidly than wages, and prices of certain commodities rise more rapidly than others. Under such conditions, wage earners and farmers would undoubtedly be prompted to form co-operatives in an attempt to bring expenditures for commodities more into line with income.

Any marked increase in demand for a product which would encourage granting of wide margins to distributors would also encourage formation of co-operatives. Current trends in the petroleum industry point toward narrower margins, so there appears to be only a remote possibility of this factor's aiding the co-operative in this industry. In this connection, the point must, however, be emphasized that the Robinson-Patman Act and resale price maintenance legislation which tend to "freeze" existing margins may encourage formation of co-operatives.

From this brief analysis it is reasonably clear that the efficient distributor in the petroleum industry as well as in other retail fields has little to fear from competition of co-operatives unless unforseen circumstances intervene.

Summary

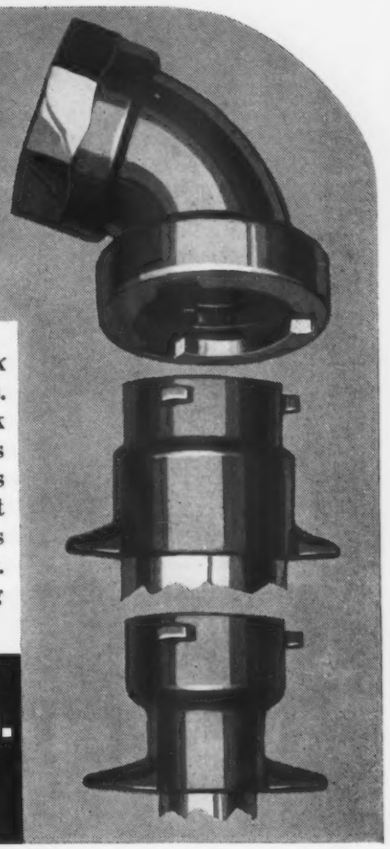
A basic need exists in this country for increased purchasing power among the medium-income and low-income groups. Price reduction provides the most satisfactory method for answering this need. The consumer co-operative has effected price reductions in foreign countries.

Several factors encouraging formation of consumer co-operatives in foreign countries are, however, absent in this country. They include national and international cartels and monopolies, relatively lower standards of living, the frugal nature of the people, inadequate transportation facilities, and absence of resourcefulness among private enterpreneurs.

The farm co-operative movement resulted from marked differences between prices of farm supplies and farm commodities in the post-war period. Wide retail margins also aided the movement. Difficulties and costs involved in distribution of manufactured products to farmers also played significant roles. Marked spreads between prices and wages probably explain formation of consumer co-operatives among wage-earners and white-collar workers.

Current indications point to no startling developments in consumer co-operation in the immediate future unless changing economic conditions should especially favor this type of enterprise. Trends in the petroleum industry minimize the possibility of further spread of co-operatives.

MORRISON
Quick Detachable
Filler Tubes



● These handy underground tank fillers have interchangeable tubes. Elbows attached to truck tank hose. With a quarter turn tube is quickly fastened to elbow. Tubes furnished in various sizes to fit any fill pipe. When ordering tubes please specify size of fill-pipe. Write for New Morrison Catalog and Prices.

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BETTENDORF
OIL BURNERS

Good housekeeping is a continuous operation at this station of E. R. Whitfield, at Montgomery, Ala., the result being the station is known far and near for its attractiveness. The proprietor makes each employe responsible, for a week, for its appearance and gives a prize once a month to the man who had the station at the highest degree of appearance during his week

What Gives A Station "IT"?

SPRING time is clean-up time and a good time for service station operators to join in with the "clean-up and paint-up" campaigns held in most cities at this time of year.

One petroleum marketer who has found good housekeeping a distinct adjunct to good merchandising is E. R. Whitfield, proprietor of the Whitfield Service Station, Montgomery, Ala. He leads off the spring cleaning season each year in his city by applying a bright coat of paint to his station, but he keeps the place dolled up 365 days in the year.

For eight consecutive months last year, Whitfield won the placque awarded monthly to the operator in his zone by a leading oil company for excellence in sales, service and efficiency. This honor was won over scores of other stations competing in the territory south of Birmingham.

A NATIONAL PETROLEUM NEWS representative delved into Whitfield's business in an effort to find the secret of his success. His is not a new station and it is not a big station, but it has what the movie people call "IT" and the soap people call "A schoolgirl complexion." It has eye appeal plus, in fact if the feminine gender could be applied to a filling station it might be said to have sex appeal.

And what cosmetics does "Station Miss Whitfield" use? Besides the annual painting she gets a nice scrubbing, not once a week, not twice a week, but once a day. The chief equipment for this consists of a double length of garden hose, a long handled brush, a cleaning compound and a lot of elbow exercise.

In addition, Whitfield keeps a can of paint and brush handy, so that he can apply a little "lipstick" and "rosy cheeks" at any time of year. In addition he keeps a lawn mower on hand to mow the lawn and a pruning knife so that he can trim the hedges and shrubbery.

An air of beauty is imparted to the Whitfield station by surrounding shade trees. Other stations may not have trees but they likely possess other advantages in the way of architectural adornment, lighting, and arrangement. The station makes good use of green and white striped awnings over the windows and on the sides of the washing shed. These awnings are changed frequently, adding a debutante freshness to the place, hard to achieve otherwise. An ornamental picket fence adds to the attractiveness.

Inside the station Whitfield utilizes an idea which would add immeasurably to any station. It is a glass covered desk. Under the desk are displayed various items of interest, including road maps and data, and merchandising suggestions. Persons waiting for service invariably notice the attractiveness of this display table, which is a pleasant departure from the greasy desk and chair too often found in service stations. Merchandise displays of tires and accessories are arranged in the same good taste. Whitfield gives his wife credit for keeping the office and display room so attractive. In fact she has a lot to do with the housekeeping all around the station.

"Naturally we take pride in maintaining a spotless station, but we are actuated by what we believe sound business reasons," said Whitfield. "More beautiful automobiles are being built each year, and why should the owners of these streamlined creations be expected to do business with a place that has been allowed to go to seed. Beauty has entered into everything, even to the design of oil cans on my shelf and the construction of the tires which we sell. Ugliness can no longer succeed and petroleum market-

O.K.

IN OUR many years of business we have never had a complaint on the quality of our Lard Oils, Neatsfoot Oils or Acidless Tallow Oil. We are told by our customers that the reason for the absence of complaints is that our deliveries are always strictly in accordance with the specifications or qualities ordered.

OIL DIVISION

THE MARTIN DENNIS COMPANY

859 Summer Ave. Newark, N. J.

ers everywhere are awaking to this fact."

"One only has to watch tourist traffic to have proof that the 'it' stations are getting the business. Experts tell us that 85 per cent of our impressions come through the eyes. It is the impression gained by a hurried glance that determines into which station a motorist drives. Of course after he drives in other factors count, but it is exterior appearance that brings the first response.

"Experience has proven to us the value of attractive rest rooms, both in building up a local and tourist trade. Women drive blocks out of their way and pass up other stations in order to come to our place. In appreciation, they give us their gasoline and oil business."

Mr. Whitfield stimulates his assistants to help keep the station clean by offering a prize each month. The assistants take a turn a week with the housekeeping, Whitfield taking his turn also, and the prize goes to the one adjudged to have done the best job for the week. In addition the employes enjoy the praise they receive from customers for having such an attractive station.

Aside from making his station a beauty spot, Whitfield is also a good merchant

E. R. Whitfield, proprietor of the Whitfield Service Station, Montgomery, Ala.

otherwise. He admitted, however, there were only two things he knew to do to sell more merchandise, namely to "display it and ask people to buy it."

For a typical month the station sales were as follows: 9000 gallons of gasoline, 537 gallons of oil, 58 tires, 72 tubes, 18 batteries, 186 sparkplugs, 11 oil filters, 64 lamp bulbs, 43 wiper blades and 161 lubrications. From these figures most any dealer can figure up and see that Whitfield is really asking them to buy. Month in and month out he maintains a pretty good average of selling one gallon of oil for each 14 gallons of gas.

On occasions when Whitfield has won prizes offered by the oil, tire or accessory people, the local newspapers have carried pictures of him and his station. He advertises in the newspapers, over the radio and in the telephone directory. This come under his classification of "telling the people about it."

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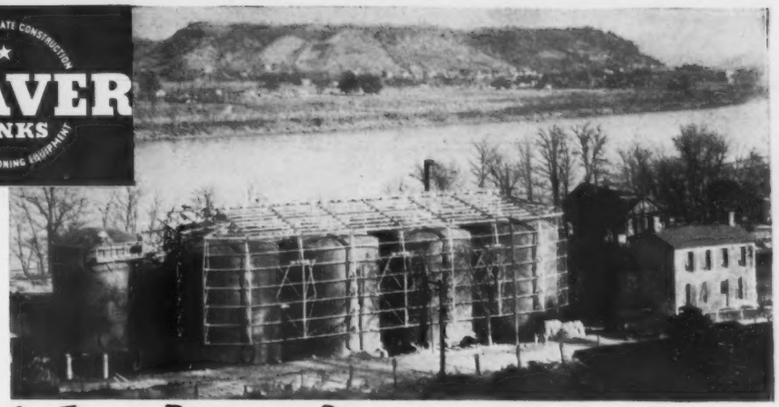

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Field Equipment
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Tanks, standard sizes or built to specifications
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75 Years of Dependable Service
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Happy Motoring

ESSO STATION

NOT CONNECTED With Standard Oil Company (Indiana)

Supplies and services are available at the Esso signs identifying thousands of American and foreign filling stations, selling motor fuels and lubricants from the world's largest refineries and most extensive petroleum research and development laboratories.

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The word ESSO is "A sign of service and a symbol of quality"

ESSO—for Premium Motor Fuel
ESSOLENE—for Regular Motor Fuel
ESSO MOTOR OIL—for Premium Motor Oil
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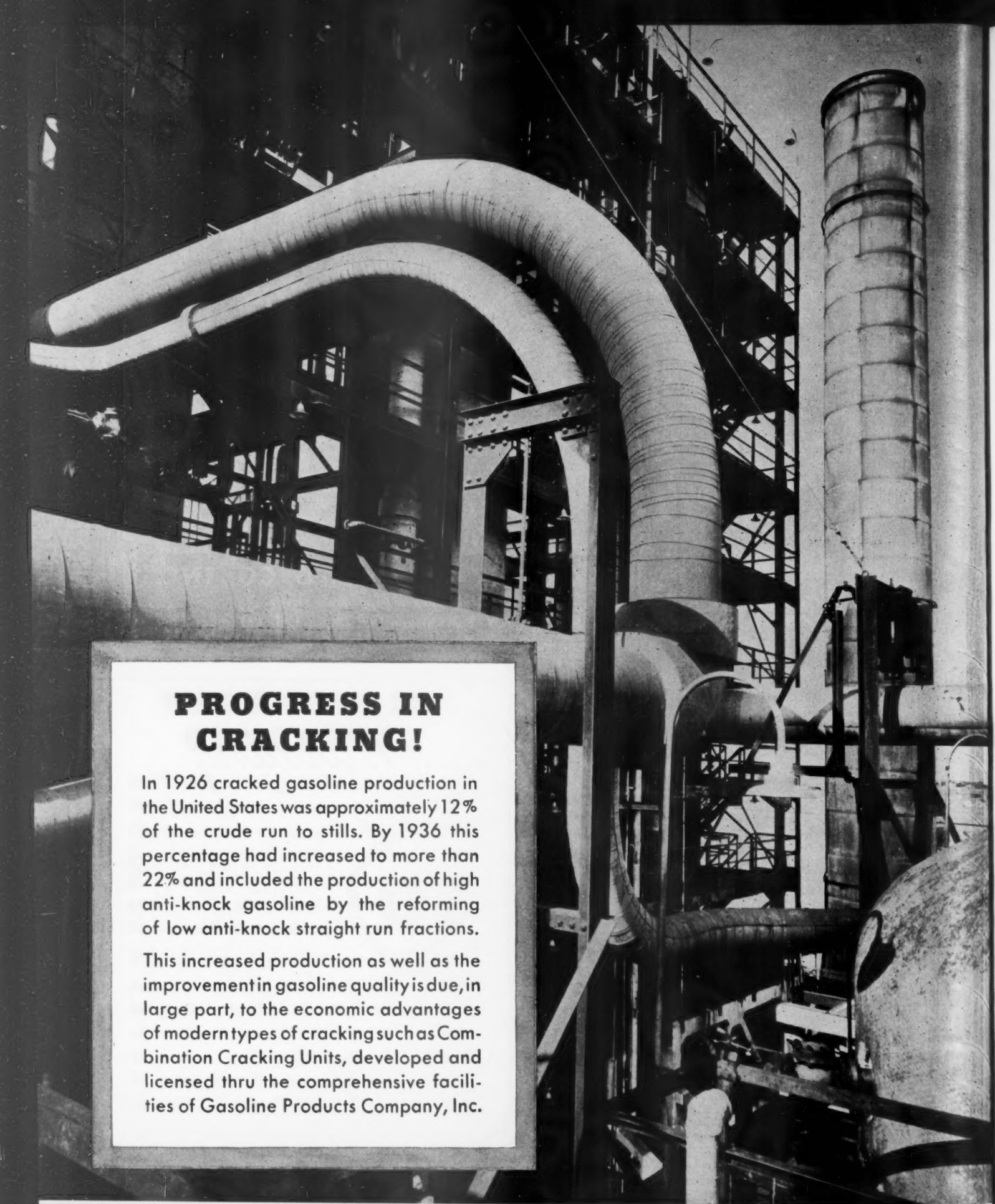

PROGRESS IN CRACKING!

In 1926 cracked gasoline production in the United States was approximately 12% of the crude run to stills. By 1936 this percentage had increased to more than 22% and included the production of high anti-knock gasoline by the reforming of low anti-knock straight run fractions.

This increased production as well as the improvement in gasoline quality is due, in large part, to the economic advantages of modern types of cracking such as Combination Cracking Units, developed and licensed thru the comprehensive facilities of Gasoline Products Company, Inc.

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GASOLINE PRODUCTS COMPANY

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11 COMMERCE STREET · NEWARK, NEW JERSEY

Political Mathematics Involved In Alcohol-as-Motor-Fuel Debate?

By ARCH L. FOSTER, TECHNICAL EDITOR

BACK somewhere in the realm of simpler mathematics is an axiom to the effect that, when unequals are added, the sums are unequal. As a corollary, when two series of numbers are added all of which are equal except one pair, that sum which includes the larger of the two numbers of that pair is the greater sum. These axioms apparently do not obtain in Political Mathematics.

In spite of these most self-evident facts, there have been those groups since time began which have attempted to refute the conclusions drawn from them. Since time began strenuous efforts have been made from various sources to evade the rules of economics, to make it appear that the more costly of a pair of products should be the one accepted and paid for by the human race.

To be specific; at the last Dearborn Conference on utilization of farm products one speaker stated that power alcohol can be made for 22.75 cents per gallon. Note that this "alcohol" contains only 78% of ethyl alcohol, 6% of other products from farm crops and 16% of coal tar products. The available heat units of this mixture were not given, but we feel safe in saying it is not greater, probably less, than that of an equivalent volume or weight of petroleum hydrocarbons.

The same speaker presented figures to show that, by mixing 5% to 15% of this mixture with equivalent quantities of gasoline (motor fuel), the resultant product is equal or superior to petroleum gasolines alone, that it shows a lower cost per mile of travel, and can be produced and sold for nearly the same price as gasoline motor fuel.

Let's take a look at the record. In April, 1936, Lichty showed that, in practice, the power output for alcohol blends is not and cannot be equal to that from petroleum motor fuels of corresponding anti-knock ratings, and he showed this in a manner which has not been successfully refuted. Before that, the Great Chemist decreed in the beginning, so far as we know, that the available heat content of ethyl alcohol, C_2H_5OH, is considerably less than that of hydrocarbons of approximately the same volatility and anti-knock rating.

Customers buy motor fuel by the gallon, barrel or other volumetric unit; the engine knows not the volumetric unit, but burns the fuel by weight, utilizing the heat units therein, which is a function of the chemical composition of the fuel. So a fuel containing a smaller number of heat units will supply a lesser amount of work, other things equal. So much for the fuel efficiency claim.

But the real fallacy in the statements made at the Dearborn Conference, is in the calculation of manufacturing costs of alcohol-blended fuels. By the calculations shown, 63-65 octane number gasoline blended with 5% and 15% of the above alcohol mixture corresponds almost precisely in octane number and cost with regular and premium grades of hydrocarbon fuels, respectively. Exact figures for octane number and itemized costs of blends were conspicuous by absence only.

To sum up the similarities and dissimilarities in this picture; transportation, handling, selling costs of the two materials—alcohol and hydrocarbon motor fuel—may be placed as equal or varying only slightly, so slightly as to affect the result infinitesimally. By direct calculation the only numbers differing appreciably are those showing manufacturing costs. Therefore, on these figures must the two fuels compete, and on them is the economics determined.

The price of Mid-Continent 62 octane number gasoline may be taken for comparison as about 5.25 cents per gallon, f.o.b. refinery. At any other price the relative differences

Contents

Modern Lubricating Oil Unit Processes Smackover Crude 50

Double vacuum distillation is a major part of the process by which a new line of lubricating oils are produced from low pour-point Smackover crudes, using a unique type of vacuum re-run unit for final separation of fractions.

Alkyl Polysulfides not Formed In Copper Sweetening Gasoline . . . by W. A. Schultze and A. E. Buell 54

Effect of copper sweetening on octane number and lead susceptibility; chemistry of sweetening; comparison of copper sweetening and doctor treating; color, gum, and corrosion effects.

shown below will still be correct, but this value will serve for comparison and is taken from current prices.

The amount of lead necessary to raise this gasoline to 68-70, or to 70-72 by the new L-3 Method, varies considerably but for straight-run fuel, which the 62 octane number material doubtless will be, a large number of individual refiners' figures indicate about one cc. of lead is required. This amount costs the refiner 0.26 cent, f.o.b. his refinery. Thus a 70-72 (L-3 M.) octane number fuel will cost 5.51 cents at the refinery. And no matter how the mathematics may be juggled, this is the price against which any other fuel must compete.

Exact data are not available as to the blending value of this alcohol-coal-tar mixture referred to, but general discussion given indicates that about 10% alcohol mixture is (to the alcohol advocate) a liberal figure to bring the anti-knock rating of the 62 O.N. fuel to the same value as given above. In a 90%-10% blend, the 0.9 gallon of gasoline will cost 4.72 cents; the 0.10 gallon of alcohol mixture will cost 22.75/10, or 2.275 cents; the total cost per gallon is therefore 6.995 cents for blended fuel. The disadvantage under which the latter labors is 1.485 cents.

Only two ways exist by which this economic disadvantage can be eliminated. One is by reducing alcohol's manufacturing cost to a figure which equals but does not exceed that of producing petroleum motor fuels of equal anti-knock value, a prospect which is hazy and doubtful indeed.

The other is by subsidizing alcohol, at the expense of petroleum, by Political Mathematics. Reducing actual costs is a procedure governed by immutable natural laws; we must learn to use chemistry and engineering to accomplish that and natural laws are not declared inoperative by any human agency. The chance for using Political Mathematics seems to be a far better one, to offer more opportunity for success.

Where the speaker on power alcohol erred in his calculations, inadvertently or purposely, as the case may be, was chiefly in charging the gasoline with the cost of double transportation, alcohol with no transportation cost. The economics of the matter, however the water may be muddied by mass of detail or by glittering generality, cannot be made to operate that way. Alcohol is the beggar, competing with an established product at a given price. The best possible advantage that might be given in practical economics to alcohol is that the latter be credited with transportation cost to a central blending point equivalent to that for gasoline to the same point. Normally, the alcohol *must* carry the burden of the cost of its transportation to the refinery for blending. Even if carried to a common blending point, alcohol cannot escape the disadvantage of its greater production cost, except by Political Mathematics.

As for subsidies, Europe is cutting its own throat to subsidize every conceivable sort of product and activity to secure motor fuel supplies. Were this country in a petroleum famine, or if any imminent probability of it existed, the answer might be different. More likely hydrogenated coal as a source of motor fuel can outdistance alcohol from any source except that of hydrocarbon gases. There is no possible reason why one industry in America should subsidize another; every economic reason is to the contrary. The exhaustion of petroleum is so distant that that excuse becomes a specious child's (or demagogue's) reasoning. On second thought, we apologize to intelligent children.

We pass many other phases of the matter, practically without exception to alcohol's disadvantage. We note that the Farm Chemurgic Council's estimate for expenditures for power alcohol research next year nearly equals that for the entire cellulose industry ($100,000 and $110,000 respectively), the latter a basic industry and one for which no substitute has appeared. It is brought out that for power alcohol for the year just closed, the Chemical Foundation contributed to power alcohol more than $275,000, while tung oil research, in an important field where economics and quality may well favor tung oil, received a grandiose $5000. The answer to those differences, we fear, is self-evident.

J. E. Howell

Howell Resigns, Warren Succeeds As Empire Production Supt.

TULSA, June 5.—J. E. Howell, general superintendent of production for Empire Oil & Refining Co. has resigned, effective June 15, to become vice-president in charge of production for Lion Oil Refining Co., Ed Dorado, Ark.

He joined the Empire as a junior engineer in 1919 and was assigned work in the Kansas fields after graduating from Alabama Tech. He became division superintendent of the North Texas division, with headquarters at Wichita Falls, in 1923, where he remained until he came to Bartlesville as assistant general superintendent in 1925. In 1934 he was made general superintendent.

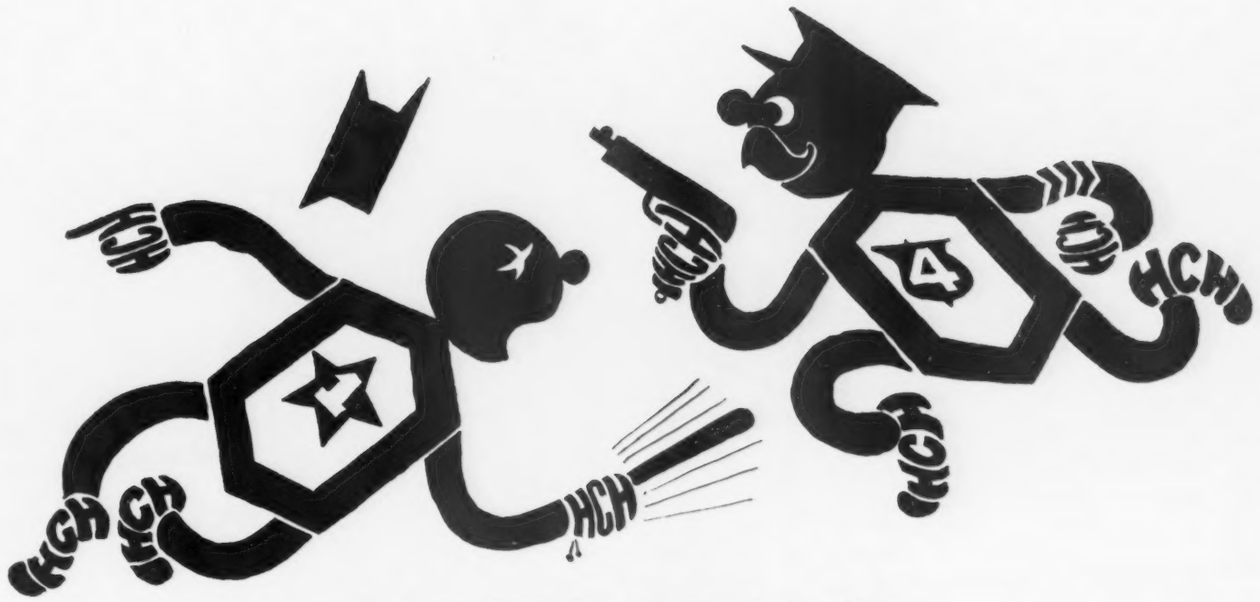
C. S. Warren, superintendent of the Kansas division, has been appointed general superintendent of production for Empire to succeed Mr. Howell.

Mr. Warren, since entering Empire service as a junior engineer in 1919, has been constantly in the oil division. He also graduated from Alabama Tech in 1919. He was in the Duncan and Healdton fields in 1921, going to Okemah in 1922. In 1925 he came into Bartlesville and the following year was sent to the Pampa and Amarillo districts. He was assigned to the New Mexico fields in 1928 and transferred as superintendent of the Kansas division at El Dorado in 1930.

Hydrogenation In England

LONDON, June 1.—The hydrogenation process of Imperial Chemical Industries, at Billingham, has not yet shown itself to be a good commercial proposition even with the advantage of the existing customs duty, declared Lord McGowan, company chairman, at the company's annual meeting.

Still convinced that a right decision was made in embarking on the enterprise, he said he was satisfied that the hydrogenation system is the best technical and commercial process for conversion of coal without creating by-products. His remark referred to considerable publicity given recently to alternative methods.



HI, SERGEANT

The chemical sergeant is now on call when you need him for gum inhibiting jobs that are too hard for the chemical cop to handle

The sergeant has a number - he is U O P Inhibitor No 4 The cop is No 1

The chemical cop is on duty in more than a score of refineries, inhibiting thousands of barrels of cracked gasoline every day - doing a good job

But sometimes he gets up against it

In such cases call the chemical sergeant

They dont come too tough for him - that's why he rates chevrons

Considering the money he saves you, the chemical sergeant, like the chemical cop, really works for nothing - and boards himself

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

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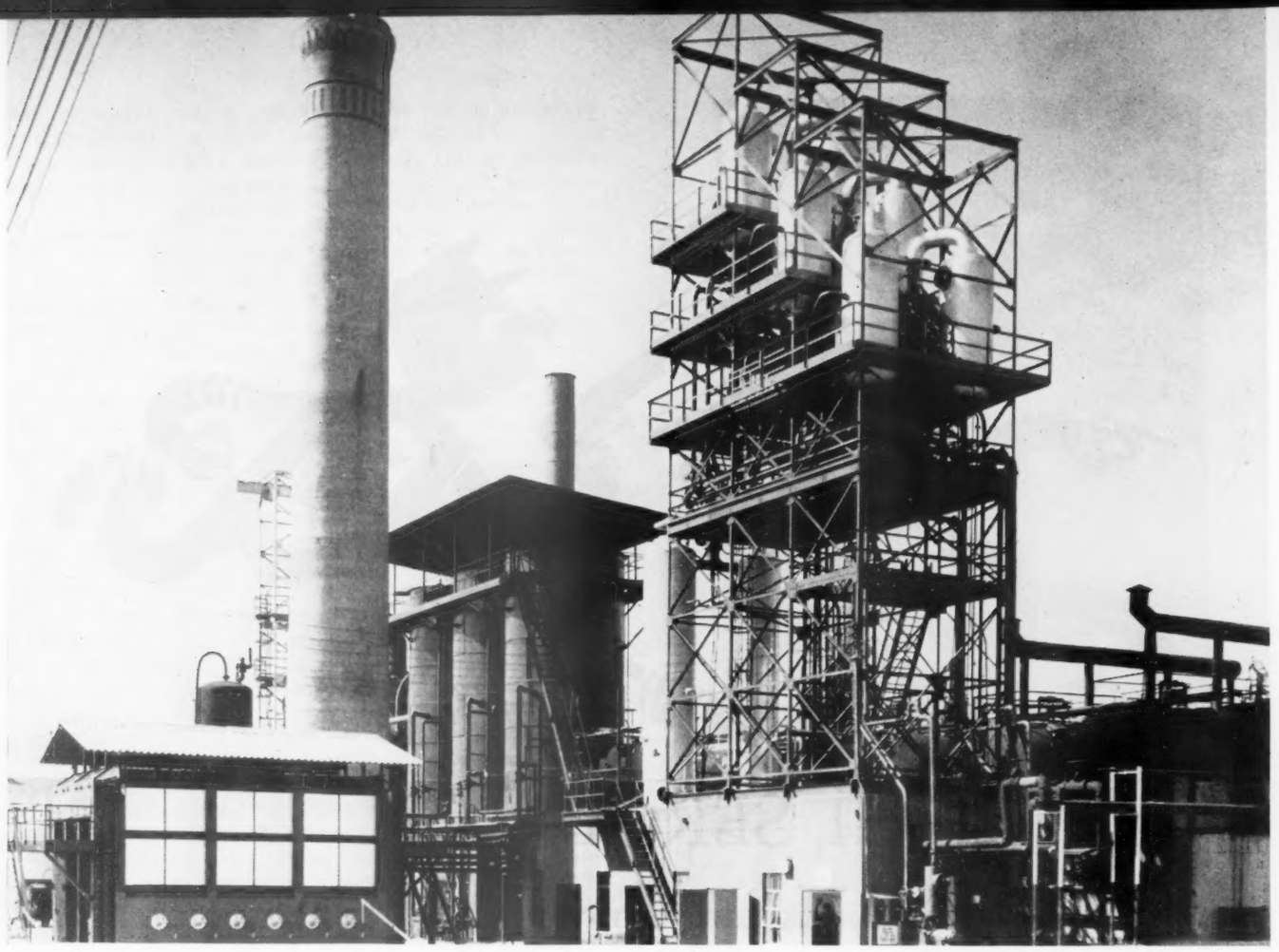

Main vacuum re-distillation unit at Lion Oil Refining Co.'s plant at El Dorado, Ark., from which six closely fractionated overhead cuts are taken, corresponding to six SAE lubricating oil grades

Modern Lubricating Oil Unit Processes Smackover Crude

By **ARCH L. FOSTER**
Technical Editor

● A vacuum re-run unit consisting of six drip type tubular heating units and condensers enable Lion Oil Refining Co. to closely fractionate six grades of lubricating oils from Smackover crude. The entire lubricating fraction is separated from the crude by conventional high vacuum distillation, treated, and the final grades are separated in the unit described in this article.

THE changing picture in demand for lubricating oils, particularly for lubricants of accentuated qualities of oiliness, film strength, and stability in severe service, coupled with expanding market requirements has led the Lion Oil Refining Company of El Dorado to design and install a lubricating oil unit which in many respects is rather unique in the refining industry. This unit, only recently completed at Lion's El Dorado refinery, will process Smackover crude to produce 21,000 gallons, (500 barrels) or more of lubricating oils per day.

The crude from which these oils are made is selected in the field, with particular attention to the pour point of the finished product, and is segregated all the way to the refinery, where it is held in separate storage. Smackover crude possesses special properties which, according to refiners acquainted with it, makes it specially suitable for the manufacture of lubricants for the automotive equipment of the present. According to these refiners and the results of laboratory and service tests carried out on finished oils, the products made from this crude show specially high oxidation stability and oiliness or film strength as determined by both types of tests by which these properties are judged now.

This new unit was designed by Lion's engineering staff, with the primary purpose to separate the different fractions of the lubricating cut without superheating and thus damaging the properties inherent in the crude. The unit consists essentially of an atmospheric topping-vacuum reducing tube still, for separating the lubricating fraction; a treating plant and a vacuum rerun still for fractionating to produce the different SAE grades, and the customary storage, packaging and car loading equipment.

The crude is gathered in a separate gathering system in the field and "slugged" through the plant line to the refinery. It is washed with hot fresh water containing chemicals which remove salts and naphthenic acids before heating. It is heated

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The Solvent Dewaxing Process successfully meets requirements of present day refining . . . flexibility in application to all types of wax-bearing oil . . . low operating cost.

Solvent Dewaxing has become an important factor in the extensive plant modernization now going on throughout the industry.

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135 EAST 42nd STREET

NEW YORK, N. Y.

first in the convection section of the tube still, and flashed in an evaporator, where it is stripped with steam to give a residuum which will yield a lubricating fraction of the desired flash point, later in the system. The evaporator vapors, including gasoline and gas oil (little if any kerosine is found in this crude), pass to a single tower, from which gasoline of around 70-72 octane number is taken overhead, and gas oil, for domestic heating or cracking charge stock, is removed from the bottom.

The stripped residue from the evaporator bottom, is returned to the radiant section of the heater and flashed, under wet vacuum in the tower, from which the lubricating fraction amounting to 27-28% of the crude is taken overhead, without further stripping. The heavy bottoms from this tower are sent to the asphalt still for reduction to asphalts and road oils of a wide variety of specifications.

The lube distillate is fractionated to six S.A.E. grades, Nos. 10 to 60 inclusive, and a small amount, (7% to 8%) of heavy bottoms which is or may be further refined to bright stocks or grease—and special lubricant-making oils. This distillation unit consists of six tubular drip type heating units and condensers, with a central tube still for heating the circulating oil used to exchange heat to the lubricating oil itself. This heating oil medium, in amount about 50 barrels, is heated in a tube still, and passes through the tubes in the re-boilers countercurrent to the flow of the incoming lubricant fraction. The cooled heating oil is returned in a closed system to the still tubes to be reheated and recirculated.

The six S.A.E. grades of the new type lube oil now being marketed under the company trade name have the following specifications:

	S. A. E. GRADE					
	10	20	30	40	50	60
Vis. @ 100	200–210	300–310	.....	.....	.....	.....
Vis. @ 210	.....	.....	60–63	70–74	80–85	105–110
Flash	385	410	440	465	485	520
Fire	445	465	500	530	560	605
Color	1.5–2	2–2.5	2–2.5	2.5–3	3–4	4–5
Cold test	—25	—20	—15	—10	+5	+20

The three major properties in good lubricating oils for the increasingly severe engine operating conditions of today are, in the opinion of most technologists, high film strength under heavy pressures and high bearing temperatures; high oxidation stability under crankcase conditions, of high temperatures and violent agitation in the presence of atmospheric oxygen and/or combustion products from the combustion chamber; and freedom from the formation of gummy materials in service which cause valve and ring-sticking and the numerous troubles which follow in their wake. Especially in diesel and aviation engines are these properties at a premium.

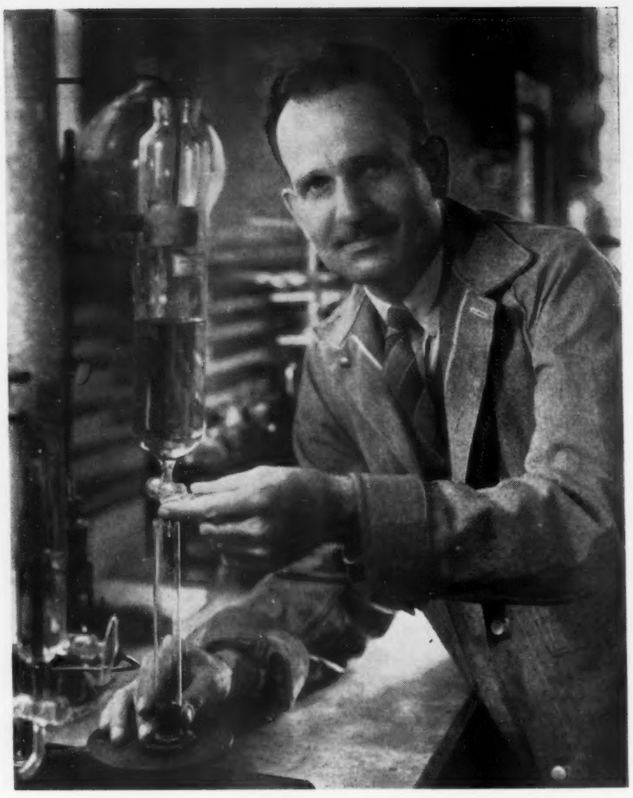
According to company engineers these oils show the following outstanding characteristics:

1. High film strength under all working conditions.
2. Low carbon and sludge forming tendencies.
3. Strong resistance to piston ring sticking.
4. Excess oiliness.
5. Maximum stability and low pour point.
6. A uniform quality product.

They expect to find a field of application for these oils particularly in diesel, aviation and similar services where the properties with which the oils are credited are of special advantage. The Conradson carbon is extremely low and the oils show high resistance to oxidation. Test runs have been made with engines in which rings were already stuck; the use of the new oils over a given period of time showed these rings released and the gummy, carbonaceous deposit on rings and pistons practically eliminated, according to results reported.

One such test was made on a 1933 model car which had been driven about 32,000 miles using a widely known Pennsylvania motor oil. The tops of the pistons, the valves and spark plugs were found to be heavily coated with carbon, however, none of the carbon was removed and the motor was again placed in operation using the new type oil. It is stated that after the third normal oil change only the faintest traces of carbon remained on these parts.

The development of this plant and the process of manufacture was in the hands of J. J. Allison, vice president of manufacturing; J. B. Rogerson, refining superintendent and chief engineer, and W. M. Carney, chief chemist of the company.



Dr. J. C. Morrell, associate director of research for Universal Oil Products Co., recently elected chairman of the Chicago section, American Chemical Society

J. C. Morrell Elected Chairman Of Chicago Section, A. C. S.

CHICAGO, June 6.—Dr. J. C. Morrell, associate director of research for Universal Oil Products Co., was recently elected chairman of the Chicago section of the American Chemical Society. This is the largest section of the society in this country, with a membership of 1300, and an attendance of 700 to 1000 chemists.

Among the other petroleum chemists and engineers and others elected or appointed to committee positions with the section are Dr. C. R. Wagner, Pure Oil Co., chairman of the finance committee and member of the policy committee; G. B. Murphy, Universal Oil Products Co., chairman of the employment committee; Paul Trusedell, Universal Oil Products Co., member of the public representation committee; G G. Lamb, Standard Oil Co. (Indiana), member of the hospitality committee; Dr. Lawrence Henderson, Pure Oil Co., chairman, membership committee.

To Publish Test Manual

CHICAGO—Universal Oil Products Co. will publish soon a book containing about 100 methods for laboratory testing of petroleum products, compiled by Universal men.

Its purpose is to encourage and promote the general use of uniform and reproducible testing methods throughout the industry. It should be of special value to companies whose technical staff and facilities are limited.

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Alkyl Polysulfides Not Formed In Copper-Sweetening Gasoline

By W. A. SCHULTZE* and A. E. BUELL*

(*Presented under the title, "The Effect Of Sweetening On The Properties Of Gasoline", before Seventh Mid-Year meeting of American Petroleum Institute, Colorado Springs, June 2, 1937*).

● "Alkyl polysulfides are not formed at all during sweetening with the copper processes."

"Octane number losses were found to be proportional to the amounts of the higher polysulfides present."

Comparative results on gasoline treated by copper and by doctor methods in the same refinery show no loss in octane number, no increase in sulfur in the case of copper; octane number loss was 3.5 numbers with doctor; sulfur present increased from 0.068 to 0.084 with doctor treating.

These are some of the important conclusions arrived at by these authors in this study of gasoline sweetening.

GASOLINES are given a sweetening treatment primarily to improve the odor. Depending on the nature of the gasoline and the method of sweetening, several other properties are also affected in varying degrees; and, unfortunately, the effects as a rule are in the wrong direction. Of these properties, octane number is probably the most important to refiners—not only because it is especially susceptible to adverse change, but because even small losses are reflected in costly increases in tetraethyl-lead requirements. Color stability, potential gum, and potential corrosion are other properties which are readily affected during the sweetening treatment. Since octane ratings are of especial significance at the present time, this paper deals mainly with this phase of the sweetening problem.

The effects referred to are not those obviously due to lack of proper facilities or occasional faulty procedure, such as loss of octane number because of weathering of the product during treatment in open agitators, or positive corrosion tests resulting from use of an excess of free sulfur in doctor treating, but rather those resulting from inherent limitations of the process, such as the occurrence of undesirable side reactions during the oxidation of mercaptans in an alkaline medium as in the doctor-treating process and its modifications.

I. Comparison of Mercaptan and Disulfide Solutions

Since the prime object of sweetening is the improvement in odor of the gasoline through conversion of the foul-smelling mercaptans to the less odorous disulfides, it can be determined whether or not there is any inherent necessity for accepting a loss in octane number as a result of sweetening, by comparing portions of a gasoline which have been dosed, respectively, with equivalent quantities of various mercaptans and the corresponding disulfides. Table 1 gives such a comparison for three of the most common mercaptans and disulfides. Several others have also been tested, and it appears that these results are typical of the entire group. In the tests reported in Table 1 sulfur compounds were dissolved in a substantially sulfur-free reference fuel which is a low vapor-pressure product of natural gasoline. The sulfur compounds were obtained from the Eastman Kodak Co., and were used without further purification. The sulfur contents shown in the table were those obtained on the prepared solutions by an extremely-accurate analytical method.

TABLE 1
Relative Knock Effects of Mercaptans and Disulfides

Compound Added	Amount as Sulfur (Per Cent)	Octane No.	Octane No. with 1 c.c. Tetraethyl Lead Per Gallon
None	.....	50.8	63.7
Methyl mercaptan	0.044	49.8	58.9
Methyl disulfide	0.050	49.9	58.9
Ethyl mercaptan	0.042	50.0	58.9
Ethyl disulfide	0.043	50.1	59.1
*n*Butyl mercaptan	0.040	49.9	58.9
*n*Butyl disulfide	0.038	49.9	58.8

Since the results obtained on the mercaptan and disulfide solutions are so nearly identical, it may be concluded that, for all practical purposes, there is little difference between these two classes of compounds in their effect on octane number with or without tetraethyl lead. Especially when it is considered that the concentration of sulfur compounds in these solutions is greater than in most of the gasolines in which appreciable octane losses occur during sweetening, it is evident that the disulfides formed during sweetening cannot be responsible for this effect.

II. Effects of Sweetening on Octane Number

When the mercaptan solutions shown in Table 1 are treated with copper-sweetening solution as described in previous articles by the authors, the octane numbers of the sweetened products are virtually the same as those of either the mercaptan solutions or the synthetic disulfide solutions. This, in conjunction with other evidence, proves conclusively that the mercaptans are converted directly and completely to disulfides in this method of sweetening. Doctor treatment, however, using plumbite solution and free sulfur according to the conventional equations:

$$Na_2PbO_2 + 2RSH \rightarrow Pb(RS)_2 + 2NaOH$$
$$Pb(RS)_2 + S \rightarrow RSSR + PbS$$

gives octane numbers considerably lower—from which it is obvious that these reactions do not tell the whole story, and that part of the sulfur must be converted to other compounds with strong pro-knock characteristics. This is shown in Table 2.

The results of the doctor treatment were obtained using fresh plumbite solution and about 90 per cent of the theoretical amount of free sulfur according to the equation cited. As will appear later, it should not be concluded that octane losses of the same magnitude would always result on solutions of similar mercaptan content, as the method of treatment apparently is the controlling factor. The losses shown are probably minimum, since the conditions used in the experimental tests were not as favorable to the formation of deleterious oxidation products as the conditions which are encountered in most commercial installations.

Investigators have expressed the reactions of doctor treating and its modifications in various ways over a period of many years, and there still is little agreement, except that it is usually assumed that the mercaptans are converted

* Phillips Petroleum Co., Bartlesville, Okla.

Facts—Not Theories

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TABLE 2

Octane Numbers of Copper-treated and Doctor-treated Mercaptan Solutions

Solution	Sulfur Content (Per cent)	ASTM Octane No.	Octane No. with 1 cc. Tetraethyl Lead per Gallon
1. Methyl mercaptan	0.044	49.8	58.9
a. Doctor-treated	0.048	48.5	56.7
b. Copper-treated	0.044	49.8	58.9
2. Ethyl mercaptan	0.042	50.0	58.9
a. Doctor-treated	0.049	48.6	57.4
b. Copper-treated	0.041	50.1	58.8
3. *n*Butyl mercaptan	0.040	49.9	58.9
a. Doctor-treated	0.043	48.6	57.8
b. Copper-treated	0.039	49.6	58.7

to disulfides without formation of more than mere traces of extraneous compounds. Effects of these compounds, however, are so pronounced that there is now little doubt that they exist in appreciable quantities, and this is becoming more widely recognized with improvement in analytical methods and better realization of the significance of effects which were formerly disregarded or attributed to other causes.

In a series of investigations made several years ago by Chaney and Schulze,[1] it was found that the lower-boiling mercaptans are readily oxidized with solutions of alkaline polysulfides, such as sodium polysulfide and caustic, even in the absence of sodium plumbite or lead sulfide. In order to be an effective oxidizing agent the sodium-polysulfide solution must have the molecular formula of Na_2S_x, wherein x is at least 3. Although the reactions involved in the sweetening step are somewhat involved and cannot be readily expressed in simple equations, the primary step may be shown by the following concurrent reactions:

$$2RSH + Na_2S_x \rightarrow R\text{-}S\text{-}S\text{-}R + H_2S + Na_2S_{x-1}$$
$$2RSH + Na_2S_x \rightarrow R\text{-}S\text{-}S\text{-}S\text{-}R + H_2S + Na_2S_{x-2}$$
$$2RSH + Na_2S_x \rightarrow R\text{-}S\text{-}S\text{-}S\text{-}S\text{-}R + H_2S + Na_2S_{x-3}$$

These equations show how the disulfides, trisulfides, tetrasulfides, and even higher polysulfides may be formed simultaneously in the process. Since the treating solutions contain excess alkali, the hydrogen sulfide formed in the reaction is converted to monosulfide—and such monosulfide also lowers the average polysulfide concentration in the solution.

With a proper choice of sodium-polysulfide treating agent it was possible to convert a large proportion of the mercaptans in naphtha solutions to alkyl polysulfides higher than the disulfides, and it was found that the properties of solutions containing these higher polysulfides were similar to the properties of doctor-treated solutions, and from the magnitude of the effects to estimate the extent of undesirable side reactions occurring in the various modifications of doctor treating. Octane-number losses were found to be proportional to the amounts of the higher polysulfides present.

In this connection, it should be borne in mind that the authors as well as other investigators have found that low-boiling mercaptans are readily oxidized merely with caustic and elementary sulfur. The reactions are probably similar to those occurring with the polysulfide solutions.

The formation of trisulfides, tetrasulfides, and even higher sulfur compounds during treatment with doctor solutions containing appreciable quantities of sodium plumbite and subsequently breaking out with elementary sulfur is perhaps explainable on the basis of either competing reactions or of transient polysulfide. In the absence of water-soluble lead compounds, it is obvious that the sodium polysulfides may be readily formed from caustic and sulfur. Thus, in the presence of lead sulfide and either: 1, caustic and sulfur or, 2, low concentrations of sodium sulfide and air, the polysulfides—serving as the oxidizing medium—may readily be formed.

This seems a more logical explanation of the mysterious reactions involved in some types of doctor treating than those previously advanced. Additional evidence lies in the fact that lead sulfide will not sweeten gasoline in the presence of high concentrations of sodium sulfide, which acts to keep the sodium-polysulfide solution below the minimum Na_2S_3.

The deleterious effects of the higher alkyl polysulfides have been reported previously. For instance, Birch and Stansfield[2] isolated trisulfide from doctor-treated ethyl-mercaptan solution, and compared the effects of synthetic trisulfides with disulfides when added to sulfur-free gasolines. They also concluded that even higher polysulfides, although not isolated, must be present in doctor-treated gasolines, since the octane losses during doctor treatment were greater than those obtained with equivalent quantities of trisulfides.

III. Plant Results

In commercial operation the copper-sweetening method has consistently shown no appreciable octane loss, regardless of the nature of the gasoline or the degree of sourness. Octane losses from doctor treating have been reported by various authors as ranging from 0.5 to 3 or more octane numbers, and this agrees with our experience. Several comparisons of the two methods are presented in the following tables; and, because it was not possible to avoid recourse to laboratory treatment for some of this work, attention should be directed to the technique necessary to obtain reliable results by the various methods. The sulfur chemistry of petroleum is indeed complex, and a rather comprehensive understanding is necessary if the experiments are to have any significance. In making the laboratory tests, the results of which are shown in this paper, every conceivable precaution was taken to avoid weathering losses and the like, so that the sweetened products were truly characteristic of the sour gasolines except for the oxidation of the mercaptans.

It should be pointed out too that new solutions were used in all of the doctor treatments, and that the octane ratings thus obtained were the maximum obtainable. In commercial practice, where the doctor solutions are used repeatedly, the octane ratings and other properties of the gasoline will be still less favorable than those reported herein. For example, the low-boiling methyl and ethyl mercaptans react with new doctor solution to give the corresponding lead mercaptides, which are almost totally insoluble in gasoline and which precipitate out as sludge. These lead mercaptides are mixed with lead sulfide, and are extremely reluctant to react with elementary sulfur to form disulfides. Even with long contacting this conversion is not complete; therefore, this first portion of gasoline from new doctor solution will contain somewhat less of the sulfur compounds than succeeding portions. The octane number of this gasoline is somewhat better, therefore, than can be obtained in practice with solutions which reach a state of more or less equilibrium with repeated use. Attention is called also to the complete extraction of methyl mercaptan from gasoline merely with caustic to form the water-soluble sodium mercaptide in the absence of soluble lead compounds. In such instances higher octane numbers are obtained than are possible in practice. These are merely some of the pitfalls which have led in the past to erroneous interpretations of the results obtained by laboratory tests with the various modifications of doctor treating. In sweetening with copper solutions, no insoluble compounds or sludges are formed, all of the mercaptans are converted to disulfides, no change occurs in the treating solution and, therefore, the results obtained in laboratory tests are always duplicable in commercial practice.

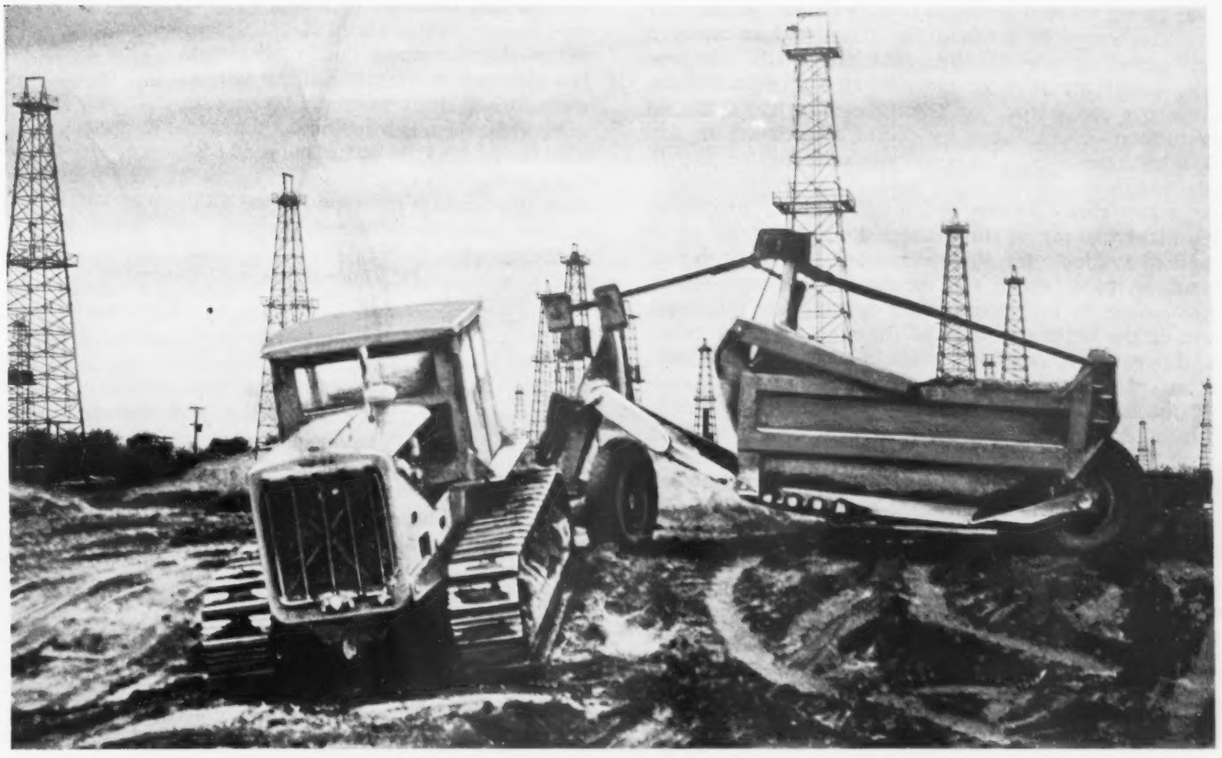
TABLE 3

Laboratory Treating Tests

	Sour	Laboratory Doctor Method "A"	Laboratory Doctor Method "B"	Laboratory and Plant, Copper
Octane No.	61.6	61.2	60.0	61.7
Octane No. plus 1 cc. tetraethyl lead	68.3	67.7	67.1	68.3

Table 3 shows results of laboratory treatment of a cracked gasoline, using the copper method and two variations of the doctor method. The sour gasoline is representative of a product on which daily tests have been made over a period of several months. Samples of the plant-sweetened gasoline showed an average loss of 0.8 octane number by the doctor

[1] Figures refer to bibliography on p. 59.



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method, and similar tests at a later period showed no loss by the copper method. The reduction in the tetraethyl-lead requirement of this gasoline as a result of conversion to the copper-sweetening method amounts to 0.25 cc. per gallon.

Doctor treatment by method "A" consisted of using a 50-per cent excess of new plumbite solution, and 80 per cent of the theoretical quantity of elementary sulfur, with one hour of vigorous contacting. As this procedure has appeared to give minimum octane losses by doctor sweetening in any of its modifications, this treatment was selected for use in the other examples.

Direct comparisons of the products from the two types of treating plants operating simultaneously on the same gasoline are seldom available for obvious reasons. It has been possible, of course, to establish the octane loss encountered in doctor sweetening in any commercial installation by direct comparison of the octane ratings of the sour and sweetened gasolines. Likewise, it has been possible to establish beyond peradventure of doubt that copper-sweetening plants subsequently installed entirely eliminated that loss. Recently, however, samples were secured from a plant operating both a large copper-sweetening unit and a large doctor-treater on the same gasoline. The results are shown in Table 4. The gasoline is a high-end-point, straight-run, Texas-Panhandle crude, used as a base in third-grade motor fuel.

There was some weathering loss in the doctor treatment, but this can account for only a relatively small part of the total octane loss. The large increase in the total sulfur content should be noted.

TABLE 4
Comparison of Copper Sweetening and Doctor Treating

	Sour	Plant, Copper-treated	Plant, Doctor-treated
ASTM octane No.	47.7	47.7	44.2
ASTM octane No. plus 1 cc. tetraethyl lead	56.7	56.7	52.4
ASTM octane No. plus 3 cc. tetraethyl lead	65.5	65.5	61.5
RSH sulphur, per cent	0.035	...	...
Total sulfur, per cent	0.068	0.068	0.084
Corrosion test	...	negative	negative
Gravity, deg. API	60.2	60.3	59.8
Reid vapor pressure, lb.	5.45	5.45	5.10
ASTM Distillation, Deg. F.:			
Initial boiling point	108	105	104
10-per-cent point	162	161	162
50-per-cent point	250	251	249
90-per-cent point	369	368	371
End point	422	422	416

For further direct examples, it has been necessary to resort to laboratory treatment by one of the methods as compared to plant treatment by the other method. This gives valid results when the copper-treating method is used in the laboratory. In cases where it has been necessary to use laboratory doctor treatment, the results cited are known to be within the range of previous plant results before the copper-treating method was installed.

Since the gravity test is the most sensitive indication of weathering losses, examination of the data in Table 5 shows that weathering has played little or no part in these tests. It should be mentioned that whereas example "5" showed a loss of only 0.5 octane number by the laboratory doctor treatment employed in the tests, the gasoline averaged about 1.5 octane loss in plant doctor treatment. This is in line with the previous statement that the octane losses by our laboratory doctor method are extremely conservative, and represent minimum losses by such methods of treatment.

Differences in sulfur content of the copper-treated gasolines are negligible, while the increases shown in the doctor-treated gasolines represent a real difference—small in the case of the laboratory-treated samples, and appreciable for the plant samples.

IV. Color, Gum, and Corrosion

The higher alkyl polysulfides, which may be thought of as persulfides, are analogous to peroxides in their effects on the various properties of gasoline. As already shown, these persulfides and peroxides both cause depreciation in octane number. This analogy may now be extended to other properties of the gasoline such as potential corrosion, color stability, and potential gum.

Gasolines containing low concentrations of these polysulfides may be subjected to moderate heating over a period of time without appreciable decomposition of the polysulfides; whereas exposure to sunlight, or even the light on cloudy days, is sufficient to cause decomposition with the formation of corrosive sulfur. A gasoline containing an appreciable amount of alkyl polysulfides but no elementary sulfur, if not exposed to sunlight, will give a negative copper-strip corrosion test; whereas after exposure to sunlight it will be very badly corrosive. Some years ago it was noted that certain gasolines which showed no corrosion even after a test period of as much as three hours at 210 deg. F. would be badly corrosive in several minutes after exposure in a 4-oz. sample bottle to as little as 15 min. of sunlight. This effect was due to the decomposition of the higher alkyl polysulfides which were formed by doctor treatment in the presence of air. No doubt this effect has been encountered often in practice, but unexplained. For example, a sample of gasoline containing polysulfide compounds may have become exposed to sunlight before the corrosion test was made and, hence, the sample may have given a positive test. As is frequently the case under such conditions, a second sample may have been obtained and found to be non-corrosive simply because it was not exposed to light for so long a time as the first sample.

In connection with the potential corrosiveness of alkyl polysulfides, it should be pointed out that the amount of elementary sulfur necessary to give a positive copper-strip corrosion test varies widely with the characteristics of the gasoline. Light gasolines containing only saturated hydro-

TABLE 5
Straight-run Gasolines

	Example 1			Example 2		
	Sour	Copper (Plant)	Doctor (Laboratory)	Sour	Copper (Plant)	Doctor (Laboratory)
ASTM octane No.	53.1	53.1	51.3	50.1	50.1	49.1
ASTM octane No. plus 1 cc. tetraethyl lead	62.7	62.7	61.4	61.6	61.6	60.5
RSH sulfur, per cent	0.011	...	...	0.011	...	...
Total sulfur, per cent	0.027	0.027	0.028	0.022	0.022	0.024
Corrosion test	...	negative	negative	...	negative	negative
Gravity, deg. API	58.5	58.4	58.5	63.0	63.0	63.1
Reid vapor pressure, lb.	6.10	6.10	6.10	9.70	9.65	9.75
ASTM Distillation, Deg. F.:						
Initial boiling point	105	103	101	90	87	89
10-per-cent point	175	176	174	142	136	138
50-per-cent point	262	266	264	250	250	252
90-per-cent point	354	352	350	355	357	360
End point	405	404	403	413	416	411

Cracked Gasoline

	Example 3			Example 4			Example 5		
	Sour	Copper (Laboratory)	Doctor (Plant)	Sour	Copper (Laboratory)	Doctor (Plant)	Sour	Copper (Plant)	Doctor (Laboratory)
ASTM octane No.	68.7	68.5	66.7	63.3	63.3	62.3	67.7	67.7	67.2
ASTM octane No. plus 1 cc tetraethyl lead	72.6	72.5	71.2	69.7	69.7	68.7	73.6	73.6	72.7
RSH sulfur, per cent	0.054	...	...	0.013	...	...	0.027	...	...
Total sulfur, per cent	0.300	0.296	0.313	0.048	0.049	0.057	0.058	0.059	0.062
Corrosion test	...	negative	negative	...	negative	negative	...	negative	negative
Gravity, deg. API	59.3	59.1	59.2	54.3	54.3	54.3	61.1	61.1	61.1
Reid vapor pressure, lb.	8.00	7.70	7.70	6.15	6.00	6.00	12.55	12.30	12.65
ASTM Distillation, Deg. F.:									
Initial boiling point	92	93	92	100	100	98	85	86	84
10-per-cent point	131	133	133	171	172	170	109	106	111
50-per-cent point	240	242	242	290	289	288	239	235	242
90-per-cent point	349	353	349	355	355	355	358	356	357
End point	398	404	398	408	410	405	409	402	407

carbons will, in general, give positive corrosion tests with extremely low quantities of elementary sulfur; whereas cracked gasolines may contain a number of times more elementary sulfur before a positive test is obtained. Hence, the amount of alkyl polysulfides present in gasoline and the amount of such compounds decomposed cannot always be determined merely by exposure to sunlight and subsequent corrosion tests. It is possible to have present sufficient quantities of these deleterious compounds to cause substantial depreciation in other properties of the gasoline; for example, octane number, without noticing the adverse light effect.

It has been noted too that straight-run gasolines containing appreciable quantities of alkyl polysulfides formed during the doctor-treating process are generally somewhat color-unstable on exposure to sunlight for a period of four hours or so. Usually these gasolines become hazy, and sometimes so cloudy that they appear milky. Similar reactions occur in cracked gasoline; but, due to the greater solubility of the reaction products in unsaturated hydrocarbons, there is very little or no precipitation.

Still another very undesirable property of alkyl polysulfides is the effect on the gum stability of gasolines. As stated previously, these compounds may be likened to peroxides. They tend to destroy natural inhibitors, and render very much less effective synthetic inhibitors which may be added. In other words, it has been found that much smaller quantities of inhibitors are effective in gasolines sweetened in such manner that alkyl polysulfides are present.

At this point it seems desirable to call attention again to the fact that these extremely deleterious compounds called alkyl polysulfides are not formed at all during sweetening with the copper processes. In these new methods of sweetening the mercaptans are converted completely to disulfides. The oxidizing medium is slightly acid, whereas doctor treating in all of its various modifications employs an alkaline medium conducive and necessary to the formation of the higher polysulfides.

Thus, it has been confirmed in the rapidly-increasing number of commercial installations that copper-sweetened gasolines are much better in quality than those sweetened by doctor processes. Due to the absence of the alkyl polysulfides in copper-sweetened gasolines, such gasolines have: 1, higher octane ratings; 2 improved sunlight stability; 3, no potential corrosiveness; and, 4, greater gum stability with smaller amounts of inhibitors, either natural or synthetic. This is not because the copper treatment improves any of the qualities of the untreated gasoline other than odor, but merely that it eliminates the degrading effects resulting from other sweetening methods. The tangible benefits that are realized depend entirely on local conditions at individual plants.

Bibliography

[1] U. S. Patent 2,034,837.
[2] Birch and Stansfield, *Ind. Eng. Chem.*, 28, 668 (1936).

Refinery Sessions Planned For Houston Oil Expo.

HOUSTON, June 5.—A conference on refinery measurement and control will feature two days of the Oil-World Exposition, Inc., here Oct. 11 to 15. This conference will be held Oct. 13 and 14, in convention hall of the Exposition Bldg. and will be sponsored by Rice Institute, University of Texas, and A. & M. College.

The first day will be devoted to measurement and control in refinery and natural gasoline plant processes and measurement of flow and temperature. The second day will be devoted to discussions on the selection of valves for automatic control, pressure regulation, liquid level regulation and temperature and flow control.

Papers will be delivered by men of recognized standing in either the refinery or natural gasoline divisions of the industry or from consulting or construction engineering companies.

This conference will be under the direct supervision of M. N. Dannenbaum, M. N. Dannenbaum Co., chairman; and a committee composed of Joe Miller, assistant superintendent of natural gas plants, Humble Oil & Refining Co., Houston; and R. L. Mallory sales engineer, Brown Instrument Co., Philadelphia.

This committee will work with the general refinery committee composed of W. H. Curtin, president, W. H. Curtin & Co., chairman; George Reid, editor, "The Refiner"; O. E. Berg, sales engineer, Babcock & Wilcox Tube Co., New York; and W. J. Peddie, vice-president, Maintenance Engineering Corp.

Sunbury Knock Indicator Is Being Studied

Some 25 Sunbury knock indicators are being manufactured by the Federal Telegraph Co., of Newark, N. J., for use by oil and automotive laboratories in studying its suitability to replace the conventional bouncing pin indicator now used in knock tests, it was brought out at the recent SAE meeting at White Sulphur Springs.

E. S. L. Beale and R. Stansfield, of the Anglo-Iranian Oil Co., of England reported they have found that the cylinder strains, as produced by detonation of fuel for example, when measured between the top and a point near the bottom of the cylinder, are a good measure of the effect of the knock noise on the ear.

As a result of their investigations, the Sunbury unit has been developed. Two posts of an electro-magnetic pickup device are mounted in the cylinder, one near the cylinder head, the other near the bottom of the cylinder, the posts being adjustable for the intervening gap between them. The pickup unit is a coiled core, and the variations in current caused by the widening and narrowing of the gap, as the engine vibrates under knock conditions, are amplified by a vacuum tube unit arrangement and connected with a conventional knockmeter.

Two American laboratories have studied this unit, with the result that they believe it may be suitable to replace the bouncing pin.

SAE Group Organizes In the Southwest

TULSA, June 6.—Daniel E. Hamilton, Ethyl Gasoline Corp. representative in Tulsa, was elected chairman of the Society of Automotive Engineers' group which was organized at a dinner meeting here May 18. Dan L. R. Dresser, Marmon-Harrington Corp., was selected as vice-chairman; A. V. Bourque, executive secretary of Western Petroleum Refiners Association, was elected secretary; Wm. F. Lowe, executive secretary of the Natural Gasoline Association, is treasurer.

This group was organized through the activity of B. E. Sibley, automotive technologist for Continental Oil Co. of Ponca City and other members of the national organization, to correlate SAE activities in the southwest, where no section has heretofore functioned. A meeting will be held Sept. 30-Oct. 1, the program to be announced later. Several national figures in SAE activities will present papers there, it is stated.

Dave Proudfoot, Phillips Petroleum Co., Bartlesville, Okla., is chairman of the committee on papers; Jos. Liston, University of Oklahoma, at Norman, is chairman of the membership committee.

REVIEWS OF NEW REFINING PATENTS

Asphaltic residual oil. No. 2 069 620, *issued Feb.* 2, 1937; *filed June* 16,. 1932; *H. G. Nevitt, assignor to Socony-Vacuum Oil Co.; one drawing;* 4 *claims.*

• Heated stream of oil containing asphaltic residue is vaporized at temperatures and pressures not conducive to gasoline formation but capable of conversion of the asphaltic material to separate all products lighter than an asphaltic residue which contains 60-70% or more of 100 penetration asphalt, which has less than 1% of residue insoluble in carbon bisulfide, and which possesses physical properties suitable for road making material.

The asphaltic residue is cooled to check further molecular structural change by introducing to the vaporizer an oil which is substantially vaporizable at temperatures below that of the first vaporization, at a point without the main path of the flow of vapors from the first vaporization, allowing the second oil to vaporize in contact with the residue from the first vaporization. The asphaltic residue is then removed.

Feature of the invention is the ability to separate asphaltic residual oils, no matter from what source, and thereby widen sources of production of road oil. The process is also said to be operated in conjunction with other processes such as cracking without interfering with proper operation.

* * *

Extreme pressure lubricant. No. 2-069 790, *issued Feb.* 9, 1937; *filed Oct.* 10, 1934; *E. Wahlforss, C. L. Johnson, and G. Lacy, assignors to The Glidden Co.; no drawing;* 12 *claims.*

• Lubricant comprising a hydrocarbon lubricant and a chlororetene. Polychloro compounds are preferred because less is required and they are less volatile.

* * *

Stabilized gasoline. No. 2 070 304, *issued Feb.* 9, 1937; *filed July* 21, 1931; *A. O. Jaeger, assignor to American Cyanamid & Chemical Corp.; no drawings;* 9 *claims.*

• Benzamide, phthalamide, or other similar substance is added to a cracked motor fuel to prevent gum formation. Two to five pounds per barrel are used.

* * *

Cracking. No. 2 073 934; *issued March* 16, 1937; *filed June* 16, 1933; *E. C. Herthel, assignor to Sinclair Refining Co.; one drawing;* 6 *claims.*

• Cracked hot oil products from high boiling oil are passed into a vapor separator and similar products from lower boiling oil are passed into a separate vapor separator. Vapor mixtures escaping from both separators are combined and fractionated and a low boiling fraction including gasoline is taken off and condensed. A higher boiling fraction is supplied to the first-mentioned cracking operation. Relatively cool residual oil, including constituents corresponding to components of the high boiling oil supplied to the first-mentioned cracking operation, is supplied the second-mentioned vapor separator. A relatively cool oil of lower boiling range is introduced into the first-mentioned vapor separator. Tar is discharged from both separators.

* * *

Stabilization. No. 2 073 953, *issued March* 16, 1937; *filed Oct.* 16, 1931; *H. M. Weir and R. B. Chillas, Jr., assignors to Atlantic Refining Co.; one drawing;* 3 *claims.*

• A unitary system associated with a cracking process for the stabilization of gasoline and recovery of gasoline-like components from gas formed in cracking is provided. This system is operated under conditions entirely independent of cracking.

Unstabilized gasoline produced by cracking followed by fractional distillation is heated sufficiently to vaporize the undesired components by passing in indirect heat exchange relationship with a high temperature liquid fraction withdrawn from the fractionating zone of the cracking process. The same liquid fraction then is used as absorbent oil for scrubbing the gas previously separated from the gasoline to recover normally liquid hydrocarbons which occur therein as vapors. The enriched absorbent oil is returned to the fractionating zone following the cracking process to effect revaporization of the absorbed vapors by waste heat of the cracking step.

* * *

Hydrogenation catalyst. No. 2 073 973, *issued March* 16, 1937; *filed Oct.* 16, 1935; *A. M. Muckenfuss, assignor to E. I. du Pont de Nemours & Co.; no drawing;* 5 *claims.*

• Hydrocarbon oil containing unsaturated hydrocarbons is treated with hydrogen in the presence of an alkali metal hydrocarbide. Objects are to produce an inexpensive hydrogenation catalyst which need not be replaced or removed, which is not poisoned by sulfur, whose activity and stability increase during use, and which can be used at temperatures relatively lower than is possible with other hydrogenation catalysts such as alkali metal or alkali metal hydride.

* * *

Hydrofining. No. 2 073 578, *issued March* 9, 1937; *filed Jan.* 10, 1933; *M. H. Gwynn;* 3 *drawings;* 15 *claims.*

• Essential feature of this hydrofining is the use of metallic catalysts, such as nickel, at low temperatures and pressures whereby labile sulfur compounds are removed or converted into less troublesome compounds and gum forming unsaturated compounds are converted to useful compounds without loss of yield. Use of sulfuric acid is eliminated. Hydrofining is defined as hydrogenating and/or desulfurizing in the presence of hydrogen.

Material is contacted in the presence of hydrogen and in a series of similar stages, with a catalyst susceptible to sulfur poisoning at a maximum temperature between 75° C. and the temperature at which substantial pyrolysis occurs. The temperature is adjusted in each of the series of similar stages so that relatively equal amounts of hydrofining occur in each stage. The pressure of each stage is sufficient to sustain uniform hydrofining.

* * *

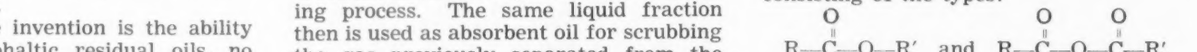
Pour point depressant. No. 2 073 641, *issued March* 16, 1937; *filed Oct.* 2, 1934; *Leo Liberthson, assignor to L. Sonneborn Sons, Inc.; no drawing;* 5 *claims.*

• Instead of adding voltol (an oil which has been polymerized by silent electric discharge) to a lubricating oil, which tends to emulsify with water, an unsaponifiable component of voltol is isolated and added to the oil to lower its pour point without the disadvantages of the original voltol.

* * *

Extreme pressure lubricant. No. 2 073 841, *issued March* 16, 1937; *filed Dec.* 8, 1934; *R. L. Humphreys and B. B. Farrington, assignors to Standard Oil Co. of Cal.; no drawing;* 15 *claims.*

• An organic derivative of an organic thio acid is mixed with a lubricating oil to produce extreme pressure lubricants. Lubricants of this composition are said to be stable in long use, do not separate into their constituent parts and do not tend to form gum or to foul or corrode metal surfaces. About 0.5 to 5% is added. The compound is of the class consisting of the types:



in which at least one oxygen atom is replaced by a sulfur atom, and in which R and R′ represent any alkyl, aryl or aralkyl radical.

* * *

Lubricant refining. No. 2 070 567, *issued Feb.* 16, 1937; *filed May* 10, 1935; *C. E. Adams, assignor to Standard Oil Co. (Ind.); one drawing;* 14 *claims.*

• In refining lubricating oil stocks by oxidizing some of the constituents the oxidation products are removed by precipitation with propane or similar normally gaseous hydrocarbons at relatively high temperature.

Quantity of gas may vary from two to 10 per volume of material undergoing treatment. Temperature varies from 125 deg. F. to 150 deg. F. and pressure is sufficient to maintain the gas in the liquid state.

* * *

Desalting crude. No. 2 074 183, *issued March* 16, 1937; *filed June* 7, 1934; *P. R. Hershman, assignor to Petro Chemical Co.; no drawing;* 6 *claims.*

• Oil is treated with a highly concentrated caustic solution of a soluble acetate. Constituents of the reagent are 25 per cent caustic soda, 10 per cent sodium acetate, 20 per cent alcohol, 0 to 10 per cent glycerine, and 35 to 45 per cent water. Alcohol acts as an anti-freeze and glycerine facilitates more intimate contact. The sodium carbonate or other carbonate is added either dry or in solution in amounts equal to caustic-acetate solution used.

* * *

Solvent extraction. No. 2 074 254, *issued March* 16, 1937; *filed May* 10, 1934; *R. J. Dearborn and W. P. Gee, assignors to The Texas Co.; one drawing; one claim.*

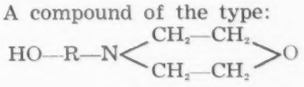
• Wax-bearing oil is diluted and extracted with furfural at 150-300° F. and

above the solid point of the wax constituents. An extract phase is formed containing low viscosity index constituents and a raffinate phase comprising high viscosity index oil, wax, some furfural and diluent liquid. The raffinate is cooled to 90° F. to separate furfural, a portion of which is removed. The remaining mixture is mixed with a further quantity of diluent and aliphatic ketone, such as acetone and methyl ethyl ketone, in proportions such that the solvent mixture has selective action as between oil and wax at 0° F. Chilled to this temperature the wax is precipitated and removed.

* * *

Stabilization. *No.* 2 071 064, *issued Feb.* 16, 1937; *filed Sept.* 21, 1933; *F. B. Downing and R. G. Clarkson, assignors to Gasoline Antioxidant Co.; no drawing;* 17 *claims.*

• A compound of the type:



is incorporated in motor fuels to prevent gum formation. R represents an aryl nucleus, such as phenyl, naphthyl, diphenyl, and the like. A particular advantage is said to be that these compounds do not discolor motor fuels during storage.

* * *

Cracking. *No.* 2 072 524, *issued March* 2, 1937; *filed May* 2, 1932; *D. H. Mace, assignor to The Texas Co.;* 3 *drawings;* 6 *claims.*

• To eliminate carbon difficulties the rate of heating oil in transit through the heating coil is regulated so as to bring oil to a cracking temperature just as it exits from the coil. Oil then enters a "drum" where cracking temperature is sustained by continuous admission of highly heated vaporous products, preferably although not necessarily, from a vapor phase cracking operation.

Carbon produced in the drum is said to be so thoroughly held in suspension in the vigorously agitated oil that it may be handled without serious caking on the unheated walls.

Another object is to provide a combined liquid-vapor phase cracking process and system of the "coil and drum" type in which the final product of the commingled vapors evolved from both phases shall retain the beneficial qualities of both types of process.

* * *

Distillation. *No.* 2 072 834, *issued March* 2, 1937; *filed April* 10, 1935; *A. R. Blakey, assignor to Doherty Research Co.; one drawing;* 8 *claims.*

• Fractionation of liquid mixtures which tend to decompose at temperatures normally necessary for their distillation. The primary object is to add a compound or fraction having a boiling point higher than, but near that of the compound or fraction being separated or fractionated from a liquid mixture.

Oil to be fractionated is heated and passed to a separating zone from which unvaporized constituents are separated from vapors. Vapors are passed upwardly through a fractionating tower countercurrent to reflux condensates. A number of side streams are withdrawn at various levels and portions reintroduced at withdrawal temperature into the tower at points directly below points of withdrawal of the stream next above. The remaining portion of each stream is passed to a stripping zone to remove lower boiling undesired constituents.

* * *

Stabilization. *No.* 2 073 073, *issued March* 9, 1937; *filed Nov.* 25, 1931; *J. K. Roberts and G. W. Watts, assignors to Standard Oil Co. (Ind.); 2 drawings;* 4 *claims.*

• Cracking vapors are fractionated to condense constituents of insufficient volatility. Remaining vapors in the gasoline range are condensed by cooling and separated from dry gases without reducing pressure. Condensate is fractionated again at lower pressure and rectified to produce a condensed stabilized heavy gasoline and an uncondensed overhead fraction which goes to a third fractionating zone to produce a condensed stabilized light gasoline and an uncondensed wet gas fraction consisting of butane and lower boiling hydrocarbons.

Heavy gasoline is chemically treated and blended with condensed stabilized light gasoline to produce a finished stabilized gasoline. The wet gas is passed to an absorption zone where it meets cooled condensate from the primary fractionating zone. Butane and other higher boiling hydrocarbons are absorbed from the wet gas and unabsorbed propane is withdrawn and discarded with lower boiling hydrocarbons as a dry gas. Enriched condensate from the absorption zone is withdrawn and returned to the primary fractionating zone where absorbed butane and higher boiling hydrocarbons are released.

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SAFE!

THERE'S no need to put up with these arch-thieves any longer. It's so easy and economical to protect your profits with du Pont Gasoline Antioxidants.

And here's why it costs less to stabilize cracked gasoline by this modern method: These highly effective chemicals minimize the need for redistillation—reduce color loss—maintain anti-knock quality. They protect expensive equipment against acid corrosion, *and that means lower maintenance costs.*

Many refiners are enjoying increased profits from higher yields through the use of du Pont Gasoline Antioxidants. A letter from you will bring you further information about the advantages of these products for gasoline stabilization. E. I. du Pont de Nemours & Co., Inc., Organic Chemicals Department, Wilmington, Delaware.

DU PONT

GASOLINE ANTIOXIDANTS

Markets

At A Glance . . .

Mid-Continent: Refined gasoline steady; natural higher.

Mid-Western: Gasoline trading heavy.

Eastern Seaboard: Gasoline higher at three points.

Pennsylvania: Wax prices higher.

Gulf Coast: Cargo trading light.

California: Wilmington crude unsettles market.

Wax: Prices steady in coastal markets.

California

Gasoline Easy

N. P. N. News Bureau
LOS ANGELES, June 4

● Overproduction of low-grade crude oil in the new Wilmington field was largely responsible for continued easiness of wholesale gasoline prices on Pacific Coast petroleum markets the past week.

Distress supplies of Wilmington crude from the wells of independent producers with limited capital were sold at $0.50 a barrel and trucked to small refineries in the Long Beach area that had been inactive in recent months because of inability to secure crude.

The gasoline from these small plants was offered at 7.625 cents a gallon, as it was in active competition with a higher grade product brought into the Basin from the San Joaquin Valley and distributed at 7.75 cents.

Fuel oil prices were irregular. Low-grade, high sulphur, product was offered at $0.60 per barrel in the Basin but was not in demand even at this price. Higher grades were firmer, with an upward trend in prices indicated at major company plants, the range being from $0.70-$0.80 per barrel.

Mid-Continent

Natural Gasoline Higher

N. P. N. News Bureau
TULSA, June 7

● Higher natural gasoline prices featured the Mid-Continent market the first week of June.

After unsuccessfully scouring the market for Grade 26-70 for Gulf Coast shipment, one large buyer bid 0.125 cent higher for this product, f.o.b. Breckenridge. His 3.625-cent offer failed to bring out additional supplies and he indicated still higher prices might be bid for large quantities of natural.

Flood waters have delayed movement of natural gasoline from one or two Kansas plants, creating a temporary shortage in some districts. Grade 26-70 was quoted 3.5 to 3.625 cents, f.o.b. Group 3.

Mid-Continent refined gasoline prices failed to respond to the heavy consumption over the holiday weekend. Some refiners had expected price advances, but they failed to materialize. Movement against contracts was unusually brisk, although conflicting reports were heard as to open market movement.

Kerosine was closely held in most Mid-Continent districts. Inter-refinery inquiry was active, although few inquiries resulted in business due to supply scarcity. Louisiana refiners advanced kerosine prices 0.125 cent.

Demand for blended motor oils was heavy, according to most Mid-Continent manufacturers. Bright stock and neutral oil demand, however, was light.

Wax was scarce and higher prices were indicated by several makers.

N. P. N. Gasoline Index

	Dealer T. W.	Tank Car
	Cents per gallon	
June 8	10.68	6.75
Month ago	10.64	6.73
Year ago	10.32	6.40

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 13 wholesale markets for regular-grade gasoline.

N. P. N. Refinery Index

The Refinery Index shown below is the calculated average return from refining a barrel of 36 gravity Mid-Continent crude into its various principal products at the current price of crude oil. The index indicates the following margins in cents per barrel between cost of crude and current selling price of products.

Date	Margin
June 1	57.9
Month ago	58.2
Year ago	60.7

Eastern

New York Gasoline Up

N. P. N. News Bureau
NEW YORK, June 7

● Advance of 0.5 cent a gallon in dealer and consumer gasoline prices by Socony-Vacuum Oil Co. in metropolitan New York City June 3, which was met by other suppliers, was the highlight of eastern light oil markets last week. Service station gasoline prices in the metropolitan area were reported steady.

Tank car gasoline prices to jobbers were advanced 0.25 cent at Baltimore, Portland and by many suppliers at New York harbor. Tank car prices for 65 octane and above at Baltimore were mostly at 7.5 cents, at Portland, 8 cents; and at New York harbor, 7.25 to 7.5 cents.

Tank car and tank wagon kerosine prices were higher in New York and New England as companies generally announced new schedules for present and next winter's business. Tank car prices were mostly at a minimum of 5.75 cents a gallon at seaboard terminals, except at New York harbor where some suppliers quoted 5.625 cents for prompt movement.

Wax

Scale Steady

NEW YORK, June 7.—The crude scale wax market continued steady last week, with no appreciable change reported from the previous week. Buying generally was reported good in the domestic market and relatively light for export movement. Buyers said that scale was not freely offered and that there was no distress wax around.

Suppliers in some quarters inclined toward higher prices for scale, while others reported no change. Majority of quotations still were around 2.7 to 2.75 cents a pound at New York for 124-126 white scale.

Pennsylvania

Wax Up 0.1 Cent

N. P. N. News Bureau
CLEVELAND, June 7

● Continued brisk demand for gasoline and a substantial increase in wax inquiries were highlights of the western Pennsylvania refinery market the first week of June. Prices for all products were steady or higher.

Several refiners reported difficulty in meeting the gasoline requirements of their regular customers. At least two cracking plants in the lower field were down for repairs and their operators were in the market as buyers. Scarcity of gasoline available for the open market spread to the north field and Bradford-Warren district prices were up 0.125 to 0.25 cent a gallon, placing them on a parity with lower field prices.

The demand for wax appeared to be insatiable at times. Exporters particularly

were active in the market. Buyers were bidding up prices in an effort to bring out new offerings. Quotations generally were up 0.1 cent a pound over the week. Several lots of white crude scale were reported sold at the higher prices both for prompt and deferred shipment.

Fuel oil continued scarce in the upper field and at least three substantial sales of 36-40 oil were made to resale agents at 4.375 cents, up 0.125 cent from the last paid price in May.

Mid-Western

Demand Active

N. P. N. News Bureau
CHICAGO, June 7

● Ideal motoring weather over Decoration Day was followed by a wave of open market sales and shipment to contract accounts June 1. However, spot sales quickly tapered off, and as the week ended trading had subsided considerably. Contract shipments held up well throughout the week, however.

Two mid-western jobbers reported they had experienced one of the heaviest three-day consumption periods in history over the previous weekend.

Heavy consumer demand, and increase in wholesale movement before and after the holiday, had little effect on general prices in the Mid-Western market. Open market buying the last week of May removed virtually all pressure from price shading. Trading the first week of June carried on where buying prior to the holiday had left off, and the market was steady for all grades of U. S. Motor.

Kerosine was in better demand, reports from Chicago sellers indicated. Some sellers advanced prices to a minimum of 4.25 cents for the 41-43 grade.

Coastal

Trading Light

N. P. N. News Bureau
NEW YORK, June 7

● Trading in Gulf Coast cargo markets was reported light during the first week in June. However, traders said that the general market picture was good and prices were firm on all products. No cargo sales were reported at the Gulf, but a California refiner was reported to have sold a cargo of 30-32 gravity, maximum No. 4 color, gas oil at 3.3125 cents a gallon, f.o.b. a California port for August-September lifting to Europe. Traders said that 4 cents a gallon was the lowest at which a cargo of similar gas oil was available at the Gulf.

Gasoline for domestic coastwise lifting was reported tight. Several traders said they knew of only one or two cargoes that were available for prompt coastwise lifting and that on one of these the supplier was asking a price considerably above the generally accepted market level. No 65 octane gasoline was reported available at under 6.5 cents for prompt lifting.

Bunker oil was closely held. Several traders indicated that a cargo of Grade C might be had at $0.925 a barrel on a firm offer, while others insisted that none was available at under $0.95.

Crude Oil Prices, Principal Grades

(Effective 7 a.m. as of dates given. Prices are $ per bbl. of 42 U. S. gals., at the well A.P.I. Gravity)

Pennsylvania Grade in Southwest Pa. Lines (Posted by Seep agency, June 7, '37) $2.57
Lima, O. (Posted by Ohio Oil, Jan. 28, '37) 1.25
Mid-Continent, 36 Gravity: (Posted by Stanolind, Jan. 28, '37)
Oklahoma-Kansas 1.22
North Texas 1.12
East Texas (Stanolind, May 22, '37) 1.35
Panhandle Texas, 36 Gravity: (Posted by Humble, Jan. 28, '37)
Gray County 1.00
West Texas, 36 Gravity 1.00
(Posted by Humble, Jan. 28, '37)
North Louisiana-Arkansas, 36 Gravity: 1.14
(Posted by S. O. Louisiana, Jan. 28, '37)
Gulf Coastal, 36 Gravity 1.33
(Posted by Humble, Jan. 28, '37)
Rocky Mountain: (Posted by Stanolind, Jan. 28, '37)
Elk Basin, Grass Creek light .. 1.30
Big Muddy 1.23
*California, 30 Gravity, unless otherwise noted:
Los Angeles Basin: (All Effective Mar. 7, '36)
Long Beach 1.21
Santa Fe Springs 1.08
Huntington Beach 1.22
San Joaquin Valley: (All Effective Feb. 26, '36)
Kettleman Hills (36 Gravity) .. 1.31
Midway-Sunset 1.25
Coastal Area: (Effective Feb. 26, '36)
Ventura Avenue (By Associated Oil) 0.89
*Posted by S. O. California, unless otherwise noted.

Fuel Oil . . .

DEMAND MORE ACTIVE

PRICES for both light and heavy fuel oils generally were steady or higher in virtually all tank car markets the first week of June.

Farm demand for light oils as tractor fuel was begining to supplant the call for heating oil. While industrial strikes have curtailed the demand for heavy fuels, refiners reported only slightly increased inventories.

* * *

CHICAGO, June 7.—Demand for No. 1 prime white fuel oil was reported somewhat brisker by Chicago sellers the first week of June. Farm demand for this oil as tractor fuel was credited with the increase in activity. Offerings of this grade at 3.75 cents gradually were taken up, and all sellers asked a minimum of 3.875 cents by the end of the week.

Industrial fuel oils continued to hold the center of interest for traders here. Steel plants and allied industries in the Chicago district have been affected by strikes, resulting in decreased consumption and a slight build-up in available supplies. However, the increase in supplies has not yet reached proportions where prices have suffered.

Other grades of fuel oils were listless, although price shading on the Nos. 2 and 3 oils was not as pronounced as it had been in recent weeks.

* * *

NEW YORK, June 7.—Light fuel oil prices were advanced in varying amounts along the eastern seaboard the past week, as marketing companies generally announced their new price schedules, to supplant contracts which expired May 31. Announcements cover both prompt and next winter's top prices in wholesale and retail fields.

New tank car prices at key eastern sea-

(Continued on page 72)

TANK WAGON MARKETS, HEATING OILS

Prices in Effect June 7, 1937

Following are tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

	No. 1	No. 2	No. 3	No. 4
S. O. NEW JERSEY				
Newark, N. J.	*	7.00	7.00	7.00
Atlantic City, N. J.	*	6.75	6.75	6.75
Baltimore, Md.	7.50	7.00	7.00	7.00
Washington, D. C.	7.75	7.25	7.25	7.25

Discounts: At Newark and Atlantic City, purchasers taking 50,000 gals. get discount of 0.5c per gal.

SOCONY-VACUUM OIL CO., INC.				
(S. O. New York Division)				
New York City	*	7.50	7.50	7.50
Albany, N. Y.	*	7.50	7.50	7.50
Rochester, N. Y.	*	7.50	7.50	7.50
Boston, Mass.	*	7.00	7.00	7.00
Bangor, Me.	*	8.00	8.00	8.00
Manchester, N. H.	*	8.00	8.00	8.00
Burlington, Vt.	*	8.00	8.00	8.00
New Haven, Conn.	*	7.50	7.50	7.50
Providence, R. I.	*	6.75	6.75	6.75

Discounts: At New York City, consumers taking 10,000 to 50,000 gals., get 0.25c per gal. discount when minimum amount has been reached; above 50,000 gals. 0.5c. Contract buyers are paying 0.25c less than above prices at New York City, Albany, New Haven and Providence due to top-price contracts.

*Prices for No. 1 fuel in S. O. New Jersey and Socony-Vacuum territories same as for kerosine, which see in tank wagon table for various cities; prices change with kerosine.

	No. 1	No. 2	No. 3	No. 4
ATLANTIC REFINING				
Philadelphia, Pa.	7.25	6.50	6.50	6.50
Allentown, Pa.	7.25	6.50	6.50	6.50
Wilmington, Del.	7.75	7.00	7.00	7.00
Springfield, Mass.	9.00	7.50	....	7.50
Worcester, Mass.	9.00	7.50	....	7.50
Hartford, Conn.	9.00	7.50	....	7.50
S. O. OHIO				
*Ohio Statewide	8.00	8.00	7.50	6.75

Note: S. O. Ohio prices are for hose dumps, bucket dumps are 0.5c per gallon higher.

*Except Cleveland Division and City of Toledo. In Cleveland Division (Cuyahoga, Lake and Geauga counties), No. 1 price is same as statewide; Nos. 2, 3 and 4 are 0.5c higher; No. 5 is priced 0.25c lower than No. 4. In Toledo No. 2 is 0.5c lower than statewide, others same.

S. O. INDIANA		
Stanolex Fuel and Furnace Oils		
	No. 1 Fuel	**Stanolex Furnace**
Chicago	7.00	7.00
Indianapolis	....	*11.7
Detroit	7.1	7.1
Milwaukee	8	7.3
Minneapolis	7.5	7.5
Sioux City	7.1	7.1
St. Louis	7.5	6.8
Kansas City	6.5	6.5

*Includes state tax of 4c.

Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Prices effective June 7, 1937

Gasoline *and* Naphtha

OKLAHOMA

U. S. Motor gasoline:

62 octane and below	5.125– 5.25
63-67 octane	5.50 – 5.625
68-70 octane (regular)	6.125– 6.25
60-62, 400 e.p. gasoline	5.125– 5.25
64-66, 375 e.p. gasoline	*5.25 – 5.375
68-70, 350-360 e.p. gasoline	*5.25 – 5.50

WESTERN PENNA.

Bradford-Warren:

52-54 naphtha	5.625– 5.75

Motor gasoline:

U. S. Motor (58-62°)	5.75 – 5.875
Minimum 60 octane	*7.125– 7.25
Minimum 65 octane	*7.25 – 7.375
64-66, 390 e.p. gasoline	5.875– 6.00
68-70, 350-360 e.p. gasoline	6.00 – 6.125

Other districts:

52-54 naphtha	5.50 – 5.625
54-56 naphtha	5.625– 5.75

Motor gasoline:

U. S. Motor (58-62°)	5.75 – 5.875
Minimum 60 octane	7.125– 7.25
Minimum 65 octane	7.25 – 7.50
64-66, 390 e.p. gasoline	5.75 – 5.875
68-70, 350-360 e.p. gasoline	6.00 – 6.125

CALIFORNIA (3c tax to be added to prices if used in state)

54-58 U. S. Motor, 437 e.p. for in-state shipment	7.75 – 9.25
54-58 U. S. Motor, 437 e.p. for out-side state shipment	8.25 – 9.25
58-61, 375-400 e.p. gasoline, 65 octane and above	8.50 – 9.75

†NORTH TEXAS (For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).

U. S. Motor gasoline:

62 octane and below	5.125– 5.375
63-67 octane	5.50 – 5.625
68-70 octane (regular)	6.00 – 6.375
60-62, 400 e.p. gasoline	*5.125– 5.375

KANSAS (For Kansas destinations only)

U. S. Motor gasoline:

62 octane and below	5.375– 5.625
68-70 octane (regular)	6.375– 6.625

†WEST TEXAS and NEW MEXICO

U. S. Motor gasoline:

62 octane and below	5.125
63-67 octane	5.50
68-70 octane (regular)	6.125

†EAST TEXAS

60-62, 400 e.p. gasoline	*5.25 – 5.375

NORTH LOUISIANA (For shipment within Louisiana and into Arkansas)

U. S. Motor gasoline:

62 octane and below	5.50 – 5.625
63-67 octane	5.75 – 6.00
68-70 octane (regular)	6.50

ARKANSAS (For shipment within Arkansas and into Louisiana).

U. S Motor Gasoline:

62 octane and below	5.50
63-67 octane	6.00

OHIO (Quotations of S. O. Ohio. Delivered any point in Ohio).

U. S. Motor gasoline	8.875
Above 65 octane	9.125

Natural Gasoline

(Prices are those to blenders on freight basis shown below. Shipments, however, may originate in other Mid-Continent manufacturing districts, such as Panhandle Texas, Southwest Texas or Kansas.)

F.O.B. GROUP 3

Grade 26-70	3.625

F.O.B. BRECKENRIDGE

Grade 26-70	3.625

CALIFORNIA (F.o.b. plants in Los Angeles basin)

75-85, 375-390 e.p. for blending	7.75

*Nominal.

‡Only one refiner quoting.

†Refiners report they generally receive from 0.25c to 0.5c per gallon more for gasoline and kerosine for local or differential territory shipment.

Kerosine

WESTERN PENNA.

Bradford-Warren:

45 w.w. kerosine	4.75 – 4.875
46 w.w. kerosine	4.875– 5.00
47 w.w. kerosine	5.00 – 5.125

Other districts:

45 w.w. kerosine	4.75 – 4.875
46 w.w. kerosine	4.875– 5.00
47 w.w. kerosine	5.00 – 5.125

OKLAHOMA

41-43 w.w. kerosine	4.25 – 4.375
42-44 w.w. kerosine	4.375– 4.50

KANSAS (For Kansas destinations only).

41-43 w.w. kerosine	4.375– 4.50
42-44 w.w. kerosine	4.50 – 4.75

†NORTH TEXAS (For shipment to Texas and New Mexico destinations; Group 3 prices quoted on northern shipments).

41-43 w.w. kerosine	4.375

†EAST TEXAS

41-43 w.w. kerosine	*4.00 – 4.125

NORTH LOUISIANA (For shipment within Louisiana and into Arkansas).

41-43 w.w. kerosine	4.625

ARKANSAS (For shipment within Arkansas and and into Louisiana).

41-43 w.w. kerosine	‡4.75

CALIFORNIA

38-10 w.w. kerosine	4.00 – 5.50

Gas *and* Fuel Oils

WESTERN PENNA.

Bradford-Warren:

36-40 fuel oil	4.50

Other districts: (Excluding Pittsburgh District Prices).

36-40 fuel oil	4.25 – 4.375

OKLAHOMA

No. 1 white fuel oil	3.875– 4.00
No. 1 straw fuel oil	3.625– 3.875
No. 2 straw fuel oil	3.50 – 3.625
No. 2 dark fuel oil	3.375– 3.50
U. G. I. gas oil	3.00 – 3.25
28-30 zero	3.375– 3.50
28-30	‡$1.25
24-26	*$0.925–$0.95
18-22	*$0.825–$0.90
14-16	*$0.80 –$0.85

KANSAS (For Kansas destinations only).

No. 1 p.w. fuel oil	4.25
10-14 fuel oil	$0.775–$0.85

NORTH TEXAS (For shipment to Texas and New Mexico; Group 3 prices quoted on northern shipments).

No. 1 white, fuel oil	*4.00
U. G. I. gas oil	2.75 – 2.875
24-26 fuel oil	$0.85 –$0.875
18-22 fuel oil	$0.80 –$0.825

NORTH LOUISIANA (For shipment within Louisiana and into Arkansas).

No. 2 fuel oil	3.50 – 3.625
20-24 fuel oil	$1.10 –$1.15
16-20 fuel oil	$0.95 –$1.00
10-14 fuel oil	$0.80 –$0.85

ARKANSAS (For shipment within Arkansas and into Louisiana).

No. 2 fuel oil	‡3.625
28-30 gas oil, zero	‡3.375

CALIFORNIA

San Joaquin Valley:

Grade C fuel oil	$0.70 –$1.00
Diesel fuel oil	$1.20 –$1.68
Stove distillate	$1.47 –$2.10

Los Angeles:

Grade C fuel oil	$0.70 –$1.10
Diesel fuel	$1.20 –$1.68
Stove distillate	$1.26 –$2.10

San Francisco:

Grade C fuel oil	$1.15 –$1.37
Diesel fuel	$1.89
Stove distillate	$2.31

Neutral Oils

WESTERN PENNA.

Viscous Neutrals (Viscosity at 70° F.)

200 Vis. (180 at 100°) No. 3 color, 420-425 flash:

0 pour test	30.00 –30.50
10 pour test	29.00 –29.50
15 pour test	28.50 –29.00
25 pour test	27.50 –28.00

180 Vis. (165 at 100) No. 3 color, 410-415 flash:

25 pour test	26.00 –26.50

150 Vis. (143 at 100) No. 3 color, 400-405 flash:

0 pour test	25.50 –26.00
10 pour test	24.50 –25.00
15 pour test	24.00 –24.50
25 pour test	23.00 –23.50

SOUTH TEXAS

Vis.	Color	
Pale Oils:	(*Viscosity at 100° F.; pour test 0*)	
100	No. 1½-2½	5.25 – 5.50
200	No. 2-3	7.25 – 7.50
300	No. 2-3	7.75 – 8.00
500	No. 2½-3½	8.75 – 9.00
750	No. 3-4	9.25 – 9.50
1200	No. 3-4	9.75 –10.00
2000	No. 4	10.00 –10.25
Red Oils:		
200	No. 5-6	7.25 – 7.50
300	No. 5-6	7.75 – 8.00
500	No. 5-6	8.75 – 9.00
750	No. 5-6	9.25 – 9.50
1200	No. 5-6	9.75 –10.00
2000	No. 5-6	10.00 –10.25

Note: South Texas red oil prices shown above cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Viscosity at 100° F.; F.o.b. Tulsa basis).

(0 to 10 Pour Point)

Vis.	Color	
Pale Oils:		
60-85	No. 2	5.50
86-110	No. 2	6.00
150	No. 3	9.00
180	No. 3	10.00
200	No. 3	10.50
250	No. 3	11.50
280	No. 3	12.50
300	No. 3	13.00
Red Oils:		
180	No. 5	9.00
200	No. 5	9.50
250	No. 5	10.50
280	No. 5	11.50
300	No. 5	11.75

Note: Viscous oils, 15-25 pour point, generally are quoted 0.5c under 0-10 pour point oils. Non-viscous oils, 15-25 pour point generally are quoted 0.25c under 0-10 pour point oils. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Pale Oils **0 to 10 pour point:

Vis.	Color	
60-85	No. 2	7.25
86-110	No. 2	7.75
150	No. 3	10.00
180	No. 3	11.00
200	No. 3	11.50
250	No. 3	12.50
Red Oils		
180	No. 5	10.00
200	No. 5	10.50
250	No. 5	11.50
280	No. 5	12.50
300	No. 5	12.75

**Viscous oils, 15 to 30 pour point are quoted 0.5c lower. 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 pour point, are quoted 0.25c lower, beginning March 15, 1937. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT: (F.o.b. Tulsa basis).

Bright Stocks:	
190-200 Vis. at 210° D	23.00
150-160 Vis. at 210° D:	
0 to 10 pour point	20.00
10 to 25 pour point	19.50
25 to 40 pour point	19.00
150-160 Vis. at 210° E	19.00

GAS AND OIL GOLDEN CELEBRATION
FINDLAY, OHIO ··· JUNE 20-26, 1937

Ohio may well be proud--The Ohio Oil Company, with its general offices located at Findlay, has for these many years performed an unfaltering forward march toward supremacy in the oil industry. This company, one of the world's largest producers of crude oil, through its many far-flung interests maintains producing, refining and marketing operations throughout several states.

Its refined products, LINCO and MARATHON Motor Oils and Gasolines, are preferred by motorists everywhere because of their dependability and exceptional quality.

The Ohio Oil Company invites jobbers to investigate opportunities for Exclusive Territory Franchises. Write, phone or wire.

LINCO GASOLINES
•
LINCO-MARATHON MOTOR OILS
•
LINCO-PENN MOTOR OILS
•
LINCO BATTERIES and ACCESSORIES
•
LINCO TIRES and TUBES

MARATHON PRODUCTS BEST IN THE LONG RUN

LINCO

THE OHIO OIL COMPANY

GENERAL OFFICES - - - - FINDLAY, OHIO

ROBINSON, ILLINOIS | TULSA, OKLAHOMA | FT. WORTH, TEXAS

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel, tank car lots, f.o.b. refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Prices effective June 7, 1937

Cylinder Stocks (cont'd)

Mid-Continent (cont'd)

120 Vis. at 210° D:	
0 to 10 pour point	19.00
10 to 25 pour point	18.50
25 to 40 pour point	18.00
600 Stm. Rfd. Dark Green	5.50 – 7.50
600 Stm. Rfd. Olive Green	7.00 – 9.50
631 Steam Refined	‡17.50
Black Oil	3.50 – 4.00

CHICAGO (Viscosity at 210°)

Unfiltered Steam Refined:	
140	9.00
160	10.00
200	11.00
Bright stocks, 160 vis. at 210. No. 8 color:	
0 to 10 pour point	21.75
15 to 25 pour point	21.25
30 to 40 pour point	20.75
E filtered Cyl. Stock	15.50

To obtain prices delivered in Chicago, add 0.25c per gal.

‡Only one refiner quoting.

WESTERN PENNA.

600 stm. rfd. filterable	17.00 –17.50
650 steam refined	19.00 –19.50
600 flash	20.00 –20.50
630 flash	24.00 –24.50
600 Warren E	19.00 –19.50
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:	
10 pour test	28.00 –28.50
15 pour test	27.00 –27.50
20 pour test	26.00 –26.50
25 pour test	25.00 –25.50

Petrolatums

WESTERN PENNA. (Per pound, in barrels, carload lots. In tank cars, 0.5c per pound less).

Snow white	6.625– 6.75
Lily White	5.625– 5.75
Cream White	4.625– 4.75
Light Amber	2.75 – 2.875
Amber	2.50 – 2.625
Red	2.125– 2.375

Wax

WESTERN PENNA. (Per pound, f.o.b. New York basis)

122-124 wh. crude scale, A.m.p.	2.80 – 2.85
124-126 wh. crude scale, A.m.p.	2.85 – 2.90

OKLAHOMA (Per pound in barrels; in a few instances, per pound in burlap bags).

124-126 wh. crude scale, A.m.p.	2.875– 3.00

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:	
122-124	4.65 – 4.75
125-127	4.90 – 5.00
127-129	5.05 – 5.15
130-132	**5.45 – 5.55
132-134	**5.70 – 5.80
135-137	**6.45 – 6.55

**Same prices quoted in bags or slabs loose.

MID-WESTERN TANK CAR MARKET

Prices are those made by Chicago sellers, on Group 3 (Oklahoma) freight basis, although shipments may originate in other South-western or Mid-western refining districts

Gasoline

U. S. Motor gasoline:	
62 octane and below	5.00 – 5.25
63-67 octane	5.375– 5.50
68-70 octane (regular)	5.875– 6.125
60-62, 400 e.p.	5.125– 5.25
64-66, 375 e.p.	‡5.25
68-70, 350-360 e.p.	‡5.375

Kerosine

41-43 w.w.	4.125– 4.25
42-44 w.w.	4.25 – 4.375

*Nominal.

‡Only one seller quoting.

Fuel *and* Gas Oils

Domestic:

No. 1 prime white	3.875– 4.00
No. 1 straw	3.625– 3.875
No. 2 straw	3.375– 3.50
No. 2 dark	3.125– 3.375
No. 3	3.00 – 3.25
No. 4	$1.05 –$1.15
No. 5	$0.85 –$0.90

Industrial:

No. 4	$0.95 –$1.05
No. 5	$0.80 –$0.90

Industrial (cont'd)

No. 6	$0.70 –$0.80
U. G. I. gas oil	2.875– 3.25

Naphtha and Solvent

Stoddard solvent	6.875
Cleaners' naphtha	7.375
V. M. & P. naphtha	7.375
Mineral spirits	6.375
Rubber solvent	7.375
Lacquer diluent	8.375

DAILY GASOLINE PRICES

Daily range of gasoline prices as reported in PLATT'S OILGRAM, (Week Ended June 4, 1937)

	June 1	June 2	June 3	June 4	
U. S. Motor, 62 octane and below:					
*North Texas	5.125– 5.375	5.125– 5.375	5.125– 5.375	5.125– 5.375	
West Texas	5.125	5.125	5.125	5.125	
Oklahoma	5.125– 5.25	5.125– 5.25	5.125– 5.25	5.125– 5.25	
Mid-Western (Group 3 basis)	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25	
U. S. Motor, 63-67 octane:					
*North Texas	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625	5.50 – 5.625	
West Texas	5.50	5.50	5.50	5.50	
Oklahoma	5.50	5.50	5.50	5.50	
Mid-Western (Group 3 basis)	5.375– 5.50	5.375– 5.50	5.375– 5.50	5.375– 5.50	
U. S. Motor, 68-70 octane (regular)					
*North Texas	6.00 – 6.375	6.00 – 6.375	6.00 – 6.375	6.00 – 6.375	
West Texas	6.125	6.125	6.125	6.125	
Oklahoma	6.125– 6.25	6.125– 6.25	6.125– 6.25	6.125– 6.25	
Mid-Western (Group 3 basis)	5.875– 6.125	5.875– 6.125	5.875– 6.125	5.875– 6.125	
Motor Gasoline, 60-64 octane					
New York harbor	†7.00 – 7.25	†7.00 – 7.25	†7.00 – 7.25	†7.00 – 7.25	
Philadelphia district	†7.00	†7.00	†7.00	†7.00	
Baltimore district	†7.00 – 7.25	†7.00 – 7.25	†7.25	†7.25	
Motor Gasoline, 65 octane & above					
New York harbor	†7.25 – 7.50	†7.25 – 7.50	†7.25 – 7.50	†7.25 – 7.50	
Philadelphia district	†7.25	†7.25	†7.25	†7.25	
Baltimore district	†7.25 – 7.50	†7.25 – 7.50	†7.50	†7.50	
U. S. Motor Gasoline, 58-62°					
Bradford-Warren (Western Penna.)	5.75 – 5.875	5.75 – 5.875	5.75 – 5.875	5.75 – 5.875	
Other districts (Western Penna.)	5.75 – 5.875	5.75 – 5.875	5.75 – 5.875	5.75 – 5.875	
Motor Gasoline, Minimum 60 octane					
Bradford-Warren (Western Penna.)	†6.875– 7.125	†6.875– 7.125	†7.125– 7.25	†7.125– 7.25	
Other districts (Western Penna.)	7.125– 7.25	7.125– 7.25	7.125– 7.25	7.125– 7.25	
Motor Gasoline, Minimum 65 octane					
Bradford-Warren (Western Penna.)	†7.125– 7.25	†7.125– 7.25	†7.25 – 7.375	†7.25 – 7.375	
Other districts (Western Penna.)	7.25 – 7.50	7.25 – 7.50	7.25 – 7.50	7.25 – 7.50	

*For shipment to Texas and New Mexico destinations; Group 3 prices are quoted on northern shipments.
†Nominal.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 7, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. New Jersey

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Atlantic City, N. J.	7.5	9	4	*	8
Newark, N. J.	7.5	9	4	*	8
Annapolis, Md	8.6	10.1	5	*	10
Baltimore, Md	8	9.5	5	*	8.5
Cumberland, Md	9.4	11.9	5	*	10
Washington, D. C.	8	9.5	3	16	9
Danville, Va	9.2	11.7	6	*	12.9
Norfolk, Va	8	10.5	6	*	11.5
Petersburg, Va	8.3	10.8	6	*	11.7
Richmond, Va	8.3	10.8	6	*	11.7
Roanoke, Va	9.5	12	6	*	12.9
Charleston, W. Va.	8.8	11.3	6	*	12.6
Parkersburg, W. Va.	8.1	10.6	6	*	11.2
Wheeling, W. Va.	9	10.5	6	*	12.2
Charlotte, N. C.	9.4	11.9	7	*	12.6
Hickory, N. C.	9.9	12.4	7	*	13
Mt. Airy, N. C.	9.7	12.2	7	*	12.8
Raleigh, N. C.	9	11.5	7	*	12.1
Salisbury, N. C.	9.5	12	7	*	12.7
Charleston, S. C.	8	10.5	7	*	11.1
Columbia, S. C.	9	11.5	7	*	12.1
Spartanburg, S. C.	9.7	12.2	7	*	12.9

*S. O. New Jersey transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. price less 0.5c per gal.

Price basis to commercial consumers: To contract accounts, purchasing at least one full compartment at a time by hose connection: Effective March 12, 1937, in New Jersey, and March 8 in Maryland, District of Columbia, and in Arlington and Fairfax Counties in Virginia, on yearly purchases: from 2,500 to 100,000 gals., consumer t.w. price at time and place of delivery; 100,000 gals. per year, consumer tank car price, plus 0.5c per gal. Generally consumer t.w. price in foregoing states is equivalent of dealer t.w. price, less 0.5c per gal.

Effective May 15, 1937, on Essolene and Esso (by tank wagon) in North and South Carolina, West Virginia and Virginia (except Arlington and Fairfax Counties, which see above), commercial consumers taking deliveries of 50 gals. (West Va. 100 gals.) or more at one time will be billed at the posted consumer t.w. price. Deliveries less than 50 gals. (West Va. 100 gals.) will be billed at 4c per gal. over posted consumer t.w. price. Generally, posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Kerosine Discount: 1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(S. O. New York Division)

SOCONY MOBILGAS

	Consumer Tank Car	"Split" Dealer T.W.	Taxes	Total "Split" Dealer T.W.	Kerosine T.W.
Metropolitan N. Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	8.5	10	*5	15	9
Borough of Richmond (Staten Is.)	8.5	10	*5	15	9
Albany, N. Y.	8.5	10	5	15	9
Binghamton, N. Y.	9.25	10.8	5	15.8	9.5
Buffalo, N. Y.	8.67	10.3	5	15.3	9
Jamestown, N. Y.	8.28	10.8	5	15.8	9.5
Plattsburg, N. Y.	8.9	10.9	5	15.9	9.5
Rochester, N. Y.	8.74	10.3	5	15.3	9
Syracuse, N. Y.	8.7	10.3	5	15.3	9.5
Danbury, Conn	8.8	10.3	4	14.3	9
Hartford, Conn	9.1	10.6	4	14.6	9
New Haven, Conn	8.5	10	4	14	9
Bangor, Me	9.1	11.3	5	16.3	9.5
Portland, Me	8.5	10.8	5	15.8	8.75
Boston, Mass	8.5	10	4	14	8.5
Concord, N. H.	9.2	11.8	5	16.8	9.5
Lancaster, N. H.	10.1	12.8	5	17.8	10.25
Manchester, N. H.	9	11.3	5	16.3	9.5
Providence, R. I.	8.5	10	4	14	8.25
Burlington, Vt.	8.9	10.9	5	15.9	9.5
Rutland, Vt.	9.2	11.2	5	16.2	9.75

*Plus 2% city sales tax computed at time of each sale.

Note: Socony-Vacuum has transferred all service stations to dealers; no prices available.

Price basis to undivided dealers: 0.5c less than "split" dealer t.w.

Price basis to commercial consumers: Effective about Nov. 15, 1936 in New York and New England, for tank wagon delivery: monthly purchases of 25,000 gals. or over, pay consumer tank car price at point of delivery, plus 0.5c gal.; monthly purchases of 5,000 to 25,000 gals., pay undivided dealer tank wagon price at point of delivery; monthly purchases of less than 5,000 gals., pay divided dealer tank wagon price at point of delivery. Private consumers pay undivided dealer tank wagon price at point of delivery, plus 2c gal.

Atlantic Refining

ATLANTIC WHITE FLASH GASOLINE

	Commercial Tank Car	All Tax	Total Dealer T.W.	S.S.	Kerosine T.W.
Philadelphia, Pa.	7.5	5	14	17.5	10.5
Pittsburgh	8.5	5	15.5	20	11
Allentown	8.25	5	14.5	**	11
Erie	8	5	14.5	**	10
Scranton	8.25	5	14.5	**	11
Altoona	8.5	5	15.5	**	11
Harrisburg	8.25	5	14.5	**	11
Williamsport	8.5	5	15.5	**	11
Dover, Del.	...	5	14.5	**	11
Wilmington	...	5	13.5	**	11
Boston, Mass.	...	4	14	**	7.5
Springfield, Mass.	...	4	14.8	**	7.5
Worcester, Mass.	...	4	14.3	**	8
Fall River, Mass.	...	4	14	**	7.75
Hartford, Conn.	...	4	14.6	**	7
New Haven, Conn.	...	4	14	**	7
Providence, R. I.	...	3	13	**	7.75
Atlantic City, N. J.	...	4	13	**	8
Camden, N. J.	...	4	13	**	8
Trenton, N. J.	...	4	13	**	8
Annapolis, Md	...	5	15.1	**	9.5
Baltimore, Md	...	5	14.5	**	8.5
Hagerstown, Md.	...	5	15.5	**	10
Richmond, Va.	...	6	16.8	**	11.7
Wilmington, N. C.	...	7	17.6	**	11.3
Brunswick, Ga	...	7	17.5	**	*13
Jacksonville, Fla.	...	8	17.5	**	11

*Georgia has kerosine tax of 1c per gal., not included in above price.

**Atlantic Refining transferred stations to dealers; no prices available.

Price basis to undivided dealers: Dealer t.w. less 0.5c per gal.

Price basis to commercial consumers: in Penna. and Delaware, effective Mar. 11, 1937, on yearly gasoline purchases to contract accounts taking full compartment hose deliveries, using 100,000 gals. or more per year, tank car price plus 0.5c per gal.; consumers taking less than 100,000 gals., undivided dealer price. Consumers under contract and not under contract, taking less than full compartment delivery, and consumers not under contract taking full compartment delivery, get divided dealer price. Consumers taking less than 25 gals., t.w. delivery, get 4c above undivided dealer price.

Discount on kerosine: Effective Oct. 29, 1936, in Pennsylvania and Delaware, 2c per gal. off t.w. price on t.w. deliveries of 25 gals. or more at one time.

S. O. Ohio

SOHIO X-70 GASOLINE

	All Tax	**Commercial T.W.	†Divided Dlr. T.W.	Kerosine T.W.
Ohio State-Wide	5	17	15.5	16	*13.5
Counties where prices are below statewide:					
Columbiana	5	16.5	15	15.5	....
Defiance, Franklin, Knox and Pickaway	5	16	14.5	15	....
Paulding	5	15.5	14	14.5	....

RENOWN GASOLINE (Third Grade)

Ohio State-Wide	5	16.5	15	15.5	....
Counties where prices are below statewide:					
Columbiana	5	16	14.5	15	....
Defiance, Franklin, Knox, and Pickaway	5	15.5	14	14.5	....
Paulding	5	15	13.5	14	....
Counties where prices are above statewide: Butler, Clermont, Darke, Greene, Hamilton, Hocking, Miami, Montgomery, Preble, Summit, and Warren	5	17	15.5	16	....

S. O. Ohio Cont.

KEROSINE PRICES

(Off Statewide Level)

Kerosine prices are off statewide level in the following counties:

Gallia and Washington *13

Allen, Ashtabula, Auglaize, Champaign, Columbiana, Darke, Geauga, Greene, Hancock, Hardin, Logan, Mahoning, Mercer, Preble, Putnam, Shelby, Trumbull, Union, Van Wert and Wyandot: *12.5

Paulding *12

Fayette, Licking, Madison, Pickaway, Portage and Summit ..... * 9.5

*Kerosine prices include 1c state tax.

**Tank wagon price to commercial consumers, in t.w. deliveries of 25 gals. or more: less than 25-gal. deliveries get s.s. price. Price to undivided dealers is same as to commercial consumers.

†This price also to authorized agents, exclusive of 0.5c rental.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

On kerosine, prices to resellers and commercial consumers are posted generally at 3c per gal. below consumer t.w. price in any quantity, when such prices are on state-wide level.

S. O. Kentucky

CROWN GASOLINE

(Regular Grade)

	Consumer T.W.	All Tax	Total Consumer T.W.	Net Dlr.	Kerosine T.W.
Covington, Ky.	13.5	6	19.5	16.5	11
Lexington, Ky.	14	6	20	17	11
Louisville, Ky.	14	6	20	17	10.5
Paducah, Ky.	14	6	20	17	8
Jackson, Miss.	14	7	21	18	13
Vicksburg, Miss.	13.5	7	20.5	17.5	13
Birmingham, Ala.	13	*8	21	18	12
Mobile, Ala.	13	*9	22	19	11
Montgomery, Ala.	13	*9	22	19	14.5
Atlanta, Ga.	14	7	21	18	13
Augusta, Ga.	12.5	7	19.5	16.5	14
Macon, Ga.	14.5	7	21.5	18.5	14.5
Savannah, Ga.	13	7	20	17	†12
Jacksonville, Fla.	12.5	8	20.5	17.5	11
Miami, Fla.	12.5	8	20.5	17.5	†11.5
Pensacola, Fla.	13	*9	22	19	12
Tampa, Fla.	12.5	*9	21.5	18.5	11

KYSO GASOLINE

(Third Grade)

Covington, Ky.	12	6	18	15.5	....
Lexington, Ky.	12.5	6	18.5	16	....
Louisville, Ky.	12.5	6	18.5	16	....
Paducah, Ky.	12	6	18	15.5	....
Jackson, Miss.	12.5	7	19.5	17	....
Vicksburg, Miss.	12	7	19	16.5	....
Birmingham, Ala.	11	*8	19	16.5	....
Mobile, Ala.	10.5	*9	19.5	17	....
Montgomery, Ala.	10.5	*9	19.5	17	....
Atlanta, Ga.	11	7	18	15.5	....
Augusta, Ga.	9.5	7	16.5	14	....
Macon, Ga.	10.5	7	17.5	15	....
Pensacola, Fla.	11	*9	20	17.5	....

Discounts to tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below.

Discounts on kerosine: Prices in Kentucky are net, but in other states subject to 2c discount.

**Taxes*: in the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola and Tampa, both 1c city. Georgia and Mississippi kerosine prices include 1c state tax. Montgomery kerosine prices includes 1c city tax.

S. O. Indiana

	Red Crown Total Tax	Red Crown T.W.	Dealer Prices Standard Grade	Kerosine T.W.
Chicago, Ill.	4	16	14	12	10.1
Decatur, Ill.	4	16	14.5	14.5	10.1
Joliet, Ill.	4	16	14.5	14.5	10.1
Peoria, Ill.	4	16	14.5	14.5	10.1
Quincy, Ill.	4	15.8	14.3	14.3	9.9
Indianapolis, Ind.	5	17.7	16.2	16.2	*13.6
Evansville, Ind.	5	17.5	16	16	*14.6
South Bend, Ind.	5	17.9	16.4	16.4	*13.6

Above prices include these inspection fees on both gasoline and kerosine, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida, 1/8c; Illinois, 3/100c; Indiana, 1/2c per gal. in a single barrel; 3/10c per gal. in lots of 2 to 10 bbls., 1/5c for 10 to 50 bbls., 2/25c for over 50 bbls.; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal., in lots of more than 50 bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 1/25c.

Kerosine inspection fee only: Iowa, 2/25c; Michigan, 4/5c per gal. for first 2 bbls.; 3/5c for next 3; 2/5c for next 5; 3/10c for next 15, and 1/5c per gal. in lots over 25 bbls.

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 7, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

S. O. Indiana Cont.

	Red Crown Tax	Dealer Prices Red Crown T.W.	Stanolind T.W.	Kerosine T.W.
Detroit, Mich	4	15.4	13.9	13.9	9.8
Grand Rapids, Mich	4	16.5	15	15	10.9
Saginaw, Mich	4	16.3	14.8	14.8	8.5
Green Bay, Wis	5	17.7	16.2	16.2	8.6
Milwaukee, Wis	5	17.3	15.8	14.2	10.4
La Crosse, Wis	5	17.4	15.9	15.9	10.5
Minneapolis-St. Paul	5	17.4	15.9	15.9	10.5
Duluth, Minn	5	17.8	16.3	16.3	10.9
Mankato, Minn	5	17.4	15.9	15.9	10.5
Des Moines, Ia	4	15.8	14.3	13	*12.9
Sioux City, Ia	4	16	14.5	14.5	*13.1
Davenport, Ia	4	16	14.5	14.5	*13.1
Mason City, Ia	4	16.2	14.7	14.7	*13.3
St. Louis, Mo	*4	15.7	14.2	12.2	9.8
Kansas City, Mo	*4	15.4	13.9	13.9	8.9
St. Joseph, Mo	*4	15.4	11.4	11.4	6.9
Fargo, N. D.	4	17.4	15.9	15.9	11.5
Minot, N. D.	4	18.6	17.1	17.1	12.7
Huron, S. D.	*5	17.8	16.3	16.3	*10.9
Wichita, Kans	4	14.9	13.4	12.3	8.9

*Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax; South Dakota, 0.1c sales tax. State Kerosine taxes: Indiana, 4c; Iowa, 3c, all included in above prices.

Discount to commercial consumers: Effective Jan. 1, 1935, thru territory, except Michigan effective Feb. 1, on purchases per month, discount off t.w. prices; all gasolines, 25 to 1,000 gals., at t.w. price; 1,000 gals., or more, 1.5c off t.w. on Ethyl and Red Crown, and 0.5c on Stanolind. Minimum delivery is 25 gals.

Subnormal Stanolind Points

Normally Stanolind tank wagon prices are 1c under normal Red Crown t.w. prices. Among subnormal points on Stanolind t.w. are these: Des Moines, 14.1c; Mason City, 13.9c; Huron, 16c; and Wichita, 11.5c, all including state and federal taxes

S. O. Nebraska

STANDARD RED CROWN GASOLINE

	All Tax	T.W. Total	Dealer Total	Kerosine T.W.
Omaha, Neb	6	18.4	16.9	10.4
McCook	6	18	17.6	10
Norfolk	6	18.8	17.3	10.8
North Platte	6	19.2	17.7	11.2
Scottsbluff	6	19.9	18.4	10.9

Discounts to commercial consumers: for tank wagon deliveries covered only by Standard Commercial Consumer Contract, effective January 1, 1935.

S. O. Louisiana

ESSOLENE

	Consumer Tank Car	Dealer T.W.	Taxes	Posted S.S.	Kerosine T.W.
Little Rock, Ark	8	10.5	7.5	**	11.5
Alexandria, La	8	10.5	8	**	*12
Baton Rouge, La	7.5	10	8	21.5	*12
New Orleans, La	7.5	10	*10	23.5	*14
Lake Charles, La	8.5	11	8	**	*12.5
Shreveport, La	7	9.5	8	**	*9.5
Lafayette, La	8.5	11	8	**	*12.5
Bristol, Tenn	10.5	11.75	8	**	14.5
Chattanooga, Tenn	10	12.5	8	**	13.5
Knoxville, Tenn	10.5	13	8	**	14
Memphis, Tenn	8.5	11	8	**	12
Nashville, Tenn	9.5	12	8	**	11

*New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana kerosine prices include 1c state tax; in addition New Orleans has 1c parish tax.

**S. O. Louisiana transferred stations to dealers; no prices available.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Price basis to commercial consumers: Effective May 15, 1937, thru territory; commercial consumers taking 50 gals. or more at one time will be billed at posted consumer t.w. price; those taking less than 50 gals. at one time will be billed at 4c per gal. over posted consumer t.w. price. Generally, the posted consumer t.w. price will be equivalent to the dealer price less 0.5c per gal.

Humble Oil & Refining Co.

HUMBLE MOTOR FUEL

	*100% Dlr. T.W.	Total *100% Dlr. Taxes	T.W.	S.S.	Kerosine T.W.
Dallas, Tex	8.5	5	13.5	17	8
Ft. Worth, Tex	8.5	5	13.5	17	8
Houston, Tex	9.5	5	14.5	18.5	8
San Antonio, Tex	9.5	5	14.5	18.5	8

Humble Oil & Rfg. Co. Cont.

U. S. MOTOR FUEL

(Third Grade)

	*100% Dlr. T.W.	Total *100% Dlr. Taxes	T.W.	S.S.	Kerosine T.W.
Dallas, Tex	7	5	12	14	
Ft. Worth, Tex	7	5	12	14	
Houston, Tex	8.5	5	13.5	16.5	
San Antonio, Tex	8.5	5	13.5	16.5	

*Price is t.w. price to contract dealers and commercial consumers. Price to open dealers is 0.5c above t.w. prices shown above.

Price basis to dealers: to contract dealers consumer accounts off posted retail price: when posted retail price, including all taxes on Esso motor fuel is: 19.1c per gal. and above discount is 4c; 19c to 18.1c, 3.5c, and 18c and below, 3c. Humble motor fuel, 17.1c and above, 4c; 17 to 16.1c, 3.5c; and 16c and below, 3c; U. S. motor fuel, 15.1c and above, 3c; 15 to 14.1c, 2.5c; and 14c and below, 2c. To "open" dealer accounts, discounts in each case are 0.5c less on the same price basis.

Continental Oil

	Conoco Bronze Ex-Tax	Dealer Prices Total All Tax	Conoco Bronze	Demand	Kerosine T.W.
Denver, Colo	12.5	5	17.5	16.5	11.5
Grand Junc., Colo	15	5	20	19	15
Pueblo, Colo	11	5	16	15	10.5
Casper, Wyo	13	5	18	17	11.5
Cheyenne, Wyo	13	5	18	17	13
Billings, Mont	15.5	6	21.5	20.5	15.5
Butte, Mont	13.5	6	19.5	16.5	15.5
Great Falls, Mont	15.5	6	21.5	20.5	15.5
Helena, Mont	15.5	6	21.5	20.5	15.5
Salt Lake City, Utah	14.5	5	19.5	16.5	16
Boise, Ida	15.5	6	21.5	20.5	18
Twin Falls, Ida	15.5	6	21.5	20.5	18
Albuquerque, N. M.	11	†6.5	17.5	16.5	12
Roswell, N. M.	12	†6.5	18.5	15	10.5
Santa Fe, N. M.	13	*7	20	16.5	12
Muskogee, Okla	10	5	15	14	7
Oklahoma City, Okla	10	5	15	12	8
Tulsa, Okla	9	5	14	13	7
Ft. Smith, Ark	10	5	15	14	10
Little Rock, Ark	10	7.5	17.5	15.5	9.5
Texarkana, Ark	10	5	15	13	9

†Includes city tax of 0.5c.
*Includes 1c city tax.

S. O. California

STANDARD GASOLINE

	Total T.W.	Taxes	T.W.	S.S.	Kerosine T.W.
San Francisco, Cal	13.5	4	17.5	18.5	11.5
Los Angeles, Cal	13	4	17	18	9
Fresno, Cal	14.5	4	18.5	19.5	12
Phoenix, Ariz	15	6	21	22	†16
Reno, Nev	15	5	20	21	13
Portland, Ore	14	6	20	21	13.5
Seattle, Wash	14	6	20	21	13.5
Spokane, Wash	17	6	23	24	16.5
Tacoma, Wash	14	6	20	21	13.5

FLIGHT GASOLINE

(Third Grade)

San Francisco, Cal	12	4	16	17	....
Los Angeles, Cal	11.5	4	15.5	16.5	....
Fresno, Cal	13	4	17	18	....
Reno, Nev	13.5	5	18.5	19.5	....
Phoenix, Ariz	13.5	6	19.5	20.5	....
Portland, Ore	12.5	6	18.5	19.5	....
Seattle, Wash	12.5	6	18.5	19.5	....
Spokane, Wash	15.5	6	21.5	22.5	....
Tacoma, Wash	12.5	6	18.5	19.5	....

†Includes 5c state tax.

Discount to dealers: on gasoline, off t.w. price on Standard Ethyl and Standard Gasoline, to 100% dealers, 3c; to split dealers, 2c; on Flight gasoline, both 100% and split dealers, 2c.

On Stanavo Aviation Gasoline, to all classes of dealers, 3c off t.w.

To commercial consumers: off tank wagon price: on single deliveries of 40 gallons and over, Stanavo Aviation, Standard Ethyl and Standard Gasolines, 3c. Flight Gasoline, 2c per gallon. Tank wagon delivery, less than 40 gals., 1c per gal. above posted t.w. price.

On kerosine in tank car, transport truck and trailer delivery, 3c off t.w. price; plant deliveries to jobbers, 2.5c below t.w.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-STAR IMPERIAL GASOLINE

	T.W.	Total Taxes	T.W.	S.S.	Kerosine T.W.
Hamilton, Ont	16	6	22	*	17
Toronto, Ont	16	6	22	*	17
Brandon, Man	22.8	7	29.8	32.8	22.3
Winnipeg, Man	21.2	7	28.2	31.2	20.7
Regina, Sask	22.5	7	29.5	*	22
Saskatoon, Sask	25.3	7	32.3	*	24.8
Edmonton, Alta	23.5	7	30.5	*	24.2
Calgary, Alta	21	7	28	*	21.5
Vancouver, B. C.	16	7	23	27	23
Montreal, Que	13	6	19	*	17.5
St. John, N. B.	16	8	24	28	18.5
Halifax, N. S.	16	8	24	28	18.5

*Imperial Oil Ltd. transferred stations to dealers; no prices available.

Discounts to Divided Dealers: off s.s. prices: Maritime Provinces, 4c; Ontario, 2½c: Prairie Provinces and British Columbia, 3c, except Vancouver and Victoria, 4c; Quebec, divided dealers pay posted t.w. price. *To Undivided Dealers*: additional 1c discount throughout territory, except in Maritime Provinces.

Aviation Gasoline

Following are tank car and/or tank wagon prices of aviation gasoline in principal marketing territories (Stanavo aviation in all territories except Continental Oil.) Tax column includes 1c federal tax, and state tax; also municipal taxes as indicated in footnotes.

In Effect June 7, 1937

S. O. NEW JERSEY

	Tank Car	T.W.
Bayonne, N. J.	9.5	12
Baltimore, Md	10	12
Washington, D. C.		12.6
Richmond, Va		14.7
Greensboro, N. C.		15.2
Raleigh, N. C.		16.6
Charleston, W. Va		14.7

COLONIAL BEACON OIL CO.

	T.W.
Brooklyn, N. Y.	12.8
Buffalo, N. Y.	14.1
Boston, Mass	15

S. O. PENNSYLVANIA

Philadelphia, Pa	12.3
Pittsburgh, Pa	12.6

S. O. LOUISIANA

New Orleans, La	13.3
Shreveport, La	13.6

Prices in above four territories do not include state or federal taxes. They are for 74 octane grade aviation gasoline. An 80 octane product generally brings 0.5c premium and an 87 octane product, 1.5c premium over the 74 octane grade.

Note: S.s. prices in above four territories are generally 6c over t.w. prices. Above t.w. prices are net, with no discounts allowed for quantity purchases. T.w. prices are generally tank car price, plus freight, plus 2.5c per gal.

S. O. OHIO

Thru Ohio

	Consumer T.W.	Tax	Total Consumer T.W.
Stanavo Ethyl Aviation:			
73 octane	15.5	5	20.5
80 octane	16.5	5	21.5
87 octane	17.5	5	22.5

Discounts: For delivery on contract to hangar operators and resellers: 2c below commercial consumer posted t.w. price, shown above.

S. O. INDIANA

Chicago, Ill	15	4	19
Detroit, Mich	16.2	4	20.2
Milwaukee, Wisc	15.3	5	20.3
Minneapolis, Minn	15.4	5	20.4
St. Louis, Mo	14.7	*3	17.7
Kansas City, Mo	14.4	*4	18.4
Fargo, N. D.	16.4	4	20.4
Huron, S. D.	15.8	5	20.8

*Includes 1c city tax.
**Includes 0.1c to cover.

HUMBLE OIL & REFINING CO.

	Tank Car
Baytown, Tex. (exclusive of taxes)	8.5

TANK WAGON, SERVICE STATION MARKETS

Tax column includes 1c federal tax, state gasoline tax, also city and county taxes as indicated in footnotes, and inspection fees, as shown in general footnote. These prices in effect June 7, 1937, as posted by principal marketing companies at their headquarters offices, but subject to later corrections

CONTINENTAL OIL CO.

	Dealer	Tax	Total Dealer
Denver, Colo.	15.5	5	20.5
Cheyenne, Wyo.	16	5	21
Helena, Mont.	18.5	6	24.5
Salt Lake City, Utah	17.5	5	22.5
Albuquerque, N. M.	14	*6.5	20.5

*Includes city tax of 0.5c.

S. O. CALIFORNIA

Phoenix, Ariz.	17	6	23
Los Angeles, Cal.	15	4	19
San Francisco, Cal.	15.5	4	19.5
Reno, Nev.	17	5	22
Portland, Ore.	16	6	22
Seattle, Wash.	16	6	22
Spokane, Wash.	19	6	25

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Naphtha (In Tank Wagon)

In Effect June 7, 1937

S. O. NEW JERSEY

	Posted Tank Wagon Prices Mineral Spirits	V.M.&P.
Newark, N. J.	13.5	15.5
Baltimore, Md.	15.5	....
Washington, D. C.	15	....

Discounts: Buyers taking following quantities, at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y.	13	14
New York City	‡11.5	‡12.5
Rochester, N. Y.	12	15
Syracuse, N. Y.	14	15
Boston, Mass.	13.5	14
Bridgeport, Conn.	13.5	14
Hartford, Conn.	13	13.5
Providence, R. I.	13.5	14.5

‡Prices are for delivery to underground storage tanks. Lesser quantities pay 0.5c per gal. more.

ATLANTIC REFINING CO.

Philadelphia, Pa.	11.5	12.5
Lancaster, Pa.	13	14
Pittsburgh, Pa.	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	13.25	13.75

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers, off t.w. price: 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA

(Prices include state and federal taxes)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill.	15.8	16.1	15.5
Detroit, Mich.	19.2	18.2	19.3
Kansas City, Mo.	14.9	15.9	14.9
St. Louis, Mo.	15.2	16.2	14.6
Milwaukee, Wis.	19.8	20.8	19.8
Minneapolis, Minn.	18.9	19.9	17

Note: Prices for V. M. & P. apply also to Light Cleaners Naphtha. All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	10.50	10
New York Harbor	11	10
Philadelphia district	11	10
Boston	10.5	10
Providence	10.5	10
Ohio points, delivered	9.75	*9.25

*This is on S.R. solvent.

Note: In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.5c less than on V.M.&P.

Corrections

Notation of amount of change and dates not previously shown in table. Table in this issue is corrected to show these changes. Changes are on gasoline unless kerosine is indicated.

Socony-Vacuum—Socony Mobilgas:
In the New York City 0.5c advance of June 3, Borough of Richmond (Staten Island), dealer t. w. was up only 0.25c.

Kerosine:
Thru territory up irregular amounts ranging from 0.25c to 2c, June 1, except Lancaster unchanged. Advances were: 0.25c Portland, Concord; 0.5c, Plattsburg, Syracuse, Providence; 0.75c, Albany, Binghamton, Rochester, Danbury, Burlington; 1c Buffalo, Boston, Manchester; 1.25c Metropolitan New York (all boroughs), Jamestown; 1.75c Rutland; 2c Hartford, New Haven and Bangor.

S. O. Kentucky—Crown:
Birmingham, up 1c, May 19; cut 1c, June 2.
Montgomery, up 1c, May 19; cut 1c, May 26.

Kyso:
Paducah, cut 0.5c, May 18.
Vicksburg, up 0.5c, May 10.
Birmingham, up 0.5c, May 19; cut 0.5c, June 2.
Montgomery, up 1c, May 19; cut 1c, May 26.

Kerosine:
Paducah, cut 2c, May 19.

Canada—Imperial Oil—3 Star Imperial:
S. s. prices discontinued and stations transferred to dealers, thru Alberta, May 10.

Naphtha

Socony-Vacuum—Mineral Spirits & V. M. & P.
Prices revised at Buffalo, Rochester and Syracuse, June 1, and prices shown in table are net with no discounts.

TRANSACTIONS IN OIL STOCKS ON NEW YORK STOCK EXCHANGE

1936 High	1936 Low	1937 High	1937 Low	Listed Shares	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended June 5, 1937 Sales Shares	High	Low	Last	Week's Change
125½	75	114⅞	90	788,675	N.P.	Amerada Corp.	50cQ	Apr. 30, 37	1,200	95	92½	92½	— 3
35⅛	26⅝	37	28	2,664,901	$25	Atlantic Refining Co.	25c	Mar. 15, 37	5,300	30	29	29½	— ¼
118½	109	116½	107¾	148,000	$100	do pfd. A	$1.00	Feb. 1, 37	300	108⅝	†107¾	108⅝	+ 1⅝
28⅜	13¼	43⅜	29⅝	390,223	$10	Barber Co., Inc.	50c	Dec. 20, 36	2,700	31⅝	29¾	31⅝	+ ⅞
28¼	14⅛	35¼	24¼	2,247,974	5	Barnsdall Corp.	25c	Feb. 1, 37	6,200	27¼	26¼	27¼	+ ½
30	8¼	42	26	1,444,970	N.P.	Colonial Beacon Oil Co.	....	....	....	....	....	....	....
17¼	11½	17⅞	14½	13,983,287	N.P.	Consolidated Oil Corp.	20c	Feb. 15, 36	19,200	15¾	15⅛	15¾	— ⅛
106⅛	101	105⅞	104¾	132,771	N.P.	do pfd	$1.25	June 1, 37	....	....	....	....	....
44⅞	28⅛	47⅜	39¾	4,682,662	$5	Continental Oil Co.	25c	Mar. 29, 37	9,900	44½	42	44½	+ ⅞
13⅞	6⅜	17⅝	12½	1,098,618	25	Houston Oil Co., v.t.c.	....	....	8,400	15¾	14¾	15¾	+ ¼
15⅛	4⅛	22¼	12¾	1,207,132	10	Indian Refining Co.	....	....	600	14	14	14	— ½
51½	13	35¾	28	40,000	100	Louisiana Oil Refining Corp. pfd.	....	....	....	....	....	....	....
6⅜	2¼	6¾	3⅝	305,000	$1	Maracaibo Oil Exploration Co.	....	....	400	4	3⅞	4	+ ⅛
30⅞	17¼	35⅜	27½	1,855,912	$10	Mid-Continent Pet. Corp.	50c	June 1, 37	2,100	28¾	27½	28¾	+ ¼
29⅞	16¾	34	25¼	1,399,345	N.P.	Mission Corp.	45c	Dec. 18, 36	500	26½	26½	26½	— ¼
18	12⅛	22⅞	17⅛	6,563,377	N.P.	Ohio Oil Co.	35c	Dec. 15, 36	9,700	20	18½	19¾	0
23½	11¾	29¾	20¾	1,000,000	N.P.	Pacific Western Oil Corp.	65c	Dec. 18, 36	100	23¼	23¼	23¼	— ¼
20⅝	12¼	17⅛	11	4,699,885	$5	Pan Amer. Pet. & Transp. Co.	60c	Dec. 21, 36	....	....	....	....	....
4¼	1⅜	4½	2¾	199,370	N.P.	Panhandle Prod. & Ref'g. Co.	....	....	....	....	....	....	....
74½	18½	121	60	17,994	$100	do pfd	....	....	480	111	105	109	— 6
18¼	12⅜	21⅝	16¼	2,153,444	5	Petroleum Corp. of America	40c	May 29, 37	1,500	17½	17	17⅛	— ⅜
52⅜	38⅛	59¼	49½	4,152,836	N.P.	Phillips Petroleum Co.	50c	Mar. 1, 37	6,900	57⅛	54¾	56¾	0
18¼	8	20¾	14⅞	150,000	100	Pierce Oil Corp. 8% cum. pfd.	....	....	900	16	15	16	0
3⅝	1½	4⅛	3⅛	2,500,000	N.P.	Pierce Petroleum Corp.	....	....	....	....	....	....	....
27¾	11⅞	29⅞	24¼	1,050,000	$5	Plymouth Oil	25c	Mar. 31, 37	2,500	27	26	26⅞	+ ⅜
24⅞	16	24⅜	17¼	3,038,370	N.P.	Pure Oil Co.	....	....	48,600	18¼	17⅜	17⅞	— 1⅛
118	91¼	107	99	167,640	$100	do 6% pfd	$1.50	Apr. 1, 37	500	101	100½	100⅝	+ ⅝
133¾	103	112¾	108	130,000	100	do 8% pfd	$2.00	Apr. 1, 37	370	111¼	110⅞	110⅞	+ ¾
18¾	17	18⅞	16	927,305	10	Quaker State Oil & Refg.	20c	Mar. 15, 37	20	17¼	17¼	17¼	— ½
44	30½	54⅛	36⅝	1,244,383	N.P.	Seaboard Oil of Del.	25c	Dec. 15, 36	2,300	41¾	39⅞	41⅜	— ⅜
28¼	14¾	34¾	25⅝	13,070,625	N.P.	Shell Union Oil Corp.	25c	Dec. 15, 36	4,000	29⅝	28	29⅜	+ ⅜
127½	102	105⅜	102	400,000	$100	do pfd. w.w.	$1.37½	Apr. 1, 37	900	105	104½	104⅞	+ ¾
6¾	3½	4¼	3½	461,000	10	Simms Petroleum Co.	**$1.00	Jan 9, 37	....	....	....	....	....
47⅜	19½	60⅜	42	1,008,549	15	Skelly Oil Co.	....	....	1,300	56	54	56	— 1
132	97⅜	102¼	98½	120,000	100	do pfd	$1.50	May 1, 37	....	....	....	....	....
17½	12½	20¼	16¼	31,151,075	15	Socony Vacuum Oil Co.	25c	Mar. 15, 37	53,400	19½	18¼	19½	+ ⅝
47⅝	35	50	40⅝	13,014,754	N.P.	S. O. California	25c	Mar. 15, 37	9,100	43¾	42¼	43¼	— ¼
48½	32¾	50	42	15,215,677	$25	S. O. Indiana	25c	Mar. 15, 37	7,200	44¼	43⅜	43¾	— ⅛
31	25	32	30⅝	145,441	10	S. O. Kansas	$1.00	Dec. 26, 36	....	....	....	....	....
70⅜	51⅜	76	63⅛	26,200,825	25	S. O. New Jersey	$1.25	Dec. 15, 36	9,900	67⅛	65⅝	66⅝	— ⅝
91	70	77½	65	2,019,093	N.P.	Sun Oil Co.	25cQE	Mar. 15, 37	200	65½	65⅛	65½	+ ½
125	118	125	120	100,000	$100	do pfd	$1.50Q	June 1, 37	....	....	....	....	....
6¾	3	7¾	4½	966,979	$1	Superior Oil Corp. (Del.)	....	....	6,300	5	4⅝	4¾	— ⅛
55¼	28⅞	65⅛	50⅜	9,851,236	$25	The Texas Corp.	50c	Apr. 1, 37	21,300	60¼	58	60⅛	+ ⅛
15¼	7½	16⅝	11¾	930,570	10	Texas Pacific Coal & Oil Co.	10c	Mar. 1, 37	8,800	15⅛	14⅜	14¾	— ¼
21¾	19	21⅝	16¼	5,873,000	$10	Tide Water Associated Oil Co.	20c	June 1, 37	6,200	17½	16¾	17	— ⅛
106½	100⅝	97½	91¾	695,503	$100	do pfd. C. T. V.	$1.12½Q	Apr. 1, 37	100	96½	96½	96½	+ ⅛
28½	20¾	28¼	23¼	4,386,070	$25	Union Oil of California	25cQ	Feb. 10, 37	4,600	24⅛	†23¼	24	— ¼
31⅝	22⅝	31½	26½	1,200,000	N.P.	Union Tank Car Co.	40cQ	Mar. 1, 37	800	28	26⅝	27	— 1
2⅞	½	1¾	⅝	759,538	N.P.	Warner Quinlan Co.	....	....	900	⅝	†⅝	⅝	0
5¼	2¾	6¼	4¼	431,443	$5	H. F. Wilcox Oil & Gas Co.	....	....	3,500	5¾	5	5	— ¾

*New high. †New low. Ex-div. **Dividends of liquidation.
E also 6% stock dividend.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude.

Prices effective June 7, 1937

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

	*60-64 Octane	*65 Octane and Above
New York harbor	†7.25	†7.50
New York harb., barges	7.00	7.25
Philadelphia district	7.00	7.25
Baltimore district	7.25	7.50
Norfolk district	7.00	7.50
Wilmington, N. C. dist.	7.25	7.50
Charleston, S. C. dist.	7.25	7.50
Savannah district	7.25	7.50
Jacksonville district	7.25	7.50
Portland district	7.75	8.00
Boston district	7.25	7.50 – 7.75
Providence district	7.00 – 7.25	7.25 – 7.50

†Some sellers quote 0.25c less for New Jersey delivery.

WATER WHITE KEROSINE

New York harbor	5.625– 5.75
New York harbor, barges	5.50 – 5.625
Philadelphia district	5.75
Baltimore district	5.75
Norfolk district	5.75
Wilmington, N. C.	5.75
Charleston, S. C. district	5.75
Savannah district	5.75
Jacksonville district	5.75
Portland district	6.25
Boston district	5.75 – 5.875
Providence district	5.75 – 6.30

†FUEL OILS

	New York harbor	New York harbor, barges
No. 1	5.625– 5.75	5.50 – 5.625
Nos. 2-3	5.00 – 5.30	4.875– 5.125
No. 4	5.00 – 5.30	4.875– 5.125
No. 5	$1.55 –$1.60	.....
No. 6	$1.35	.....

	Philadelphia district	Baltimore district
No. 1	5.75	5.75
Nos. 2-3	4.75 – 5.00	5.00 – 5.25
No. 4	4.50 – 4.75	4.75 – 5.00
No. 5	$1.47 –$1.55	$1.55
No. 6	$1.20 –$1.35	$1.35

	Boston district	Providence district
No. 1	5.75 – 5.875	5.75 – 5.875
Nos. 2-3	5.125– 5.40	5.125– 5.30
No. 4	5.125– 5.40	4.875– 5.125
No. 5	$1.55 – $1.60	.....
No. 6	$1.35	.....

†Fuel oils meet specifications of U. S. Commercial Standards CS12-35.

	Bunker C Fuel (Ships' Bunkers)	Diesel Oil Ships' Bunkers
New York harbor	*$1.35	**$2.20
Philadelphia district	*$1.30 –$1.35	*$2.20
Baltimore district	*$1.35	**$2.20
Norfolk district	*$1.35	$2.20
Charleston district	$1.30	$2.20
Savannah district	*$1.30	$2.20
Jacksonville district	*$1.30	$2.20
Tampa district	*$1.30	$2.20
Portland district	$1.45	$2.35
Boston district	*$1.35	**$2.25
Providence district	$1.35	$2.25

	Gas Oil 28-34 Gravity per gallon	Diesel Oil Shore Plants Per gallon
New York harbor	5.25	5.25
Philadelphia district	5.00	....
Baltimore district	5.25	....
Norfolk district	5.25	....
Savannah district	....	5.25
Jacksonville district	....	5.25

*For barging add 5c per bbl.
**For barging add 6.5c per bbl.

Pacific Export

(Quotations are at seaboard, Los Angeles, in cargo lots, cents per gallon, except where otherwise noted.)

53-55 U. S. Motor	5.25 – 5.75
400 e.p. blend 65 Octane and above	5.50 – 6.00
38-40 w.w. kerosine, 150 fire point	4.50 – 5.00
41-43 w.w. kerosine	4.75 – 5.00
44 water white kerosine	5.00
Prime white kerosine	4.25 – 4.50

*Nominal.

In Cargo lots, per barrel

Diesel fuel oil, above 23.9°	$1.15 –$1.26
Diesel fuel oil, under 23.9°	$1.06 –$1.15
30-34 gas oil	$1.25 –$1.35
Grade C fuel oil	$0.85 –$1.05

In Ships' Bunkers, or deep tank lots, per barrel:

Diesel fuel oil, above 23.9 gravity	$1.25 –$1.60
Diesel, under 23.9 gravity	$1.175–$1.20
Grade C fuel oil	$1.075–$1.10

Cased Goods: (Per case)

Gasoline, U. S. Motor	$1.40 –$1.55
Gasoline, 400 e.p. blend	$1.50 –$1.65
38-40 w.w. kerosine, 150 fire point	$1.25 –$1.40
Kerosine, prime white	$1.20 –$1.30

New York Export

(Prices in cents per gallon in barrels, F.a.s. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:	
Light, 25 pour test	32.50
Dark, 25 pour test	32.00
Neutral oil:	
200 3 color, 25 pour test	35.00
150 3 color, 25 pour test	30.50
600 Warren E filtered	26.50
600 stm. rfd., unfiltered	24.50
650 stm. rfd., unfiltered	26.50
600 flash, steam refined	27.50
630 flash, steam refined	31.50

Wax, Domestic *and* Export

(Prices in cents per pound. Tests made by A. S. T. M. methods. Melting points shown below, however, are A. M. P., 3° higher than A. S. T. M. (E. M. P.) melting points. Export prices are f.a.s. carload lots. Domestic prices are f.o.b. refineries in New York and New Orleans districts, in bags, carload lots, with 0.2c discount allowed for shipment in bulk. Scale solid and fully refined slabs in bags.)

	New York Domestic	New York Export
124-6 Y.C. scale	2.60 – 2.65	2.60 – 2.65
122-4 W.C. scale	2.70 – 2.75	2.70 – 2.75
124-6 W.C. scale	2.70 – 2.75	2.70 – 2.75
123-5 Fully refined	4.45	4.125
125-7 Fully refined	4.55	4.25
128-30 Fully refined	4.80	4.50
130-2 Fully refined	5.05	4.75
133-5 Fully refined	†5.35	5.25
135-7 Fully refined	†5.60	5.50

†Shipment either in bags or in bulk.

	New Orleans Domestic	New Orleans Export
124-6 Y.C. scale	*2.65	*2.65
122-4 W.C. scale	*2.70 – 2.75	*2.70 – 2.75
124-6 W.C. scale	*2.70 – 2.75	*2.70 – 2.75
123-5 Fully refined	4.45	4.125
125-7 Fully refined	4.55	4.25
128-30 Fully refined	4.80	4.50
130-2 Fully refined	5.05	4.75
133-5 Fully refined	†5.35	5.25

†Shipment either in bags or in bulk.

Gulf Coast

(Prices are f.o.b. ship at Gulf oil terminals representing opinions of traders, except prices specified to the contrary. Prices cover bulk shipments of 20,000 barrels or more, unless otherwise noted.)

For Domestic Shipment:

MOTOR GASOLINE

59 octane and below	*6.00 – 6.125
60-64 octane number	*6.25
65 octane and above	6.50

FUEL OILS

No. 1 Fuel oil	4.75 – 5.00
No. 2 Fuel oil	4.00
No. 4 Fuel oil	3.875

KEROSINE

41-43 w.w.	4.75 – 5.00

For Export Shipment:

GASOLINE

U. S. Motor gasoline	5.875– 6.00
60-62, 400 e.p. gasoline	6.00 – 6.125
61-63, 390 e.p. gasoline	6.125– 6.25
64-66, 375 e.p. gasoline	6.25 – 6.375

KEROSINE

44 water white	5.00
41-43 water white	4.75 – 5.00
41-43 prime white	4.75 – 4.875

GAS AND BUNKER OILS

For Domestic and/or Export Shipment

‡26-30 translucent gas oil	3.875
‡30 plus translucent gas oil	4.00
230 plus transp. gas oil	4.00
Diesel Oil Ship's bunkers	†$1.90
Grade C bunker oil, for ship's bunkers	†$1.05
Grade C bunker oil, in cargoes	$0.925–$0.95

‡Less than ½ of 1% sulphur. †Barging 5c bbl. additional at some Gulf ports.

MEXICAN CRUDE AND BUNKER OILS

(F.o.b. Steamer, Tampico)

Heavy Panuco crude, taxes to be paid	*$1.35
Grade C bunker oil, ship's bunkers, taxes paid	$1.05

MID-CONTINENT LUBRICATING OILS

(Prices in cents per gallon in bbls. f.a.s. Gulf oil terminals. In drums and new barrels, 0.5c to 1c higher per gal. in some instances.)

190-200 vis. D 210 bright stock	28.50
150-160 vis. D 210 bright stock:	
0-10 pour point	25.50
10-25 pour point	25.00
25-40 pour point	24.50
150-160 vis. E 210 brt. stock	24.50
120 vis. D 210 bright stock	23.50
180 vis. No. 3 color neutral Oil:	
0-10 pour point	16.50
15-30 pour point	16.00
200 vis. No. 3 color neutral Oil:	
0-10 pour point	17.00
15-30 pour point	16.50
600 s.r. olive green	12.50
600 s.r. dark green	11.00
631 s.r.	23.00

SOUTH TEXAS LUBRICATING OILS

(Viscosity at 100° F., pour point 0. Tanker, f.o.b. Gulf oil terminals, for export shipment)

Unfiltered Pale Oils:

Vis.	Color	
100	No. 3	5.25 – 5.50
200	No. 3	6.00 – 6.50
300	No. 3	6.50 – 7.00
500	No. 3½	7.625– 7.875
750	No. 4	8.75 – 9.00
1200	No. 4	9.50 – 9.75
2000	No. 4	10.00 –10.125

Red Oils:

Vis.	Color	
100	No. 5-6	5.00 – 5.25
200	No. 5-6	5.875– 6.50
300	No. 5-6	6.25 – 6.75
500	No. 5-6	7.50 – 7.625
750	No. 5-6	8.75 – 9.00
1200	No. 5-6	9.50
2000	No. 5-6	10.00

Note: Red oil prices shown above cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate tanker freight rates to Continental ports, in shillings per ton of 2240 pounds, British sterling; to U. S. ports in cents per barrel)

	Crude &/or, Fuel		Refined Oil &/or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont.‡	28/6	29/-32/	33/6	33/6-35/
Aruba-U.K./Cont.‡	25/	25/6-27/	29/	30/-32/6
Gulf-N. Atlantic** (not E. of N. Y.):				
Hvy. Crude & Fuel, (10 to 19.9 gravity)	58c	*58c	....	....
Light Crude, (30 gravity or lighter)	53c	*53c	....	....
Gasoline	....	....	51c	*51c
Kerosine	....	....	52c	*52c
Light Fuel	....	....	53c	*53c

Note: Dirty boat quotations are enlarged to cover, "Fuel and Light Crude" quotations.

‡Continental ports in range between Bordeaux and Hamburg, both inclusive.

**Venezuela loading same rate; Tampico 2c to 3c per bbl. additional.

STANDARD OIL STOCKS ON NEW YORK CURB MARKET

1936 High	1936 Low	1937 High	1937 Low	Listed Shares	Par Value	Company	Current Dividend	Last Div. Paid	Transactions Week Ended June 5, 1937 Sales Shares	High	Low	Last	Week's Change
18	12 1/4	19	15 1/4	36,000	$25	Borne Scrymser Co.	75c	Apr. 15, 37					
50	39 3/4	51 1/2	46	200,000	50	Buckeye Pipe Line Co.	$1.00	Mar. 15, 37	250	49	47 1/2	49	+ 1
124 3/4	105	122 1/4	110 1/4	120,000	25	Chesebrough Mfg. Co.	$1.00Q	Mar. 29, 37	150	117 1/2	116 3/4	116 3/4	+ 1/4
39	19 7/8	38	28 1/2	6,974,356	$5	Creole Petroleum Co.	25c	Dec. 15, 36	2,500	34 1/4	33 1/2	33 1/2	— 7/8
47 1/2	38 1/2	47 1/2	36 1/2	50,000	$50	Eureka Pipe Line Co.	$1Q	Feb. 1, 37					
80	57	87	75	8,985,662	N.P.	Humble Oil & Refg. Co.	37 1/2c	Apr. 1, 37	2,000	78 1/2	76 7/8	78 1/2	+ 1/2
24 1/2	19 3/4	24 1/4	20 1/8	26,965,078	N.P.	Imperial Oil Ltd.	°25cS	June 1, 37	1,900	21 1/8	20 1/2	21	+ 1/8
24 3/8	19 7/8	24	20 3/8	.....	N.P.	do registered	25cS	Dec. 1, 36	200	21	21	21	— 1/4
9 3/4	5 1/2	14 7/8	7 3/4	300,000	$10	Indiana Pipe Line Co.	20c	Dec. 17, 36	300	11 1/8	11	11 1/8	0
39 5/8	32 5/8	39 1/2	33 3/4	14,324,088	N.P.	International Pet. Co.	°75cS	June 1, 37	3,200	35 3/8	34 1/4	35 3/8	+ 3/8
38 1/2	33 3/8	38	34 3/4	.....	.....	do registered	.....	.....	200	34 3/4	†34 3/4	34 3/4	— 1/8
15 3/4	9 1/4	12 1/2	10	509,000	$12.50	National Transit Co.	35c	Dec. 15, 36	.....	.....	.....	.....	.....
6 1/4	4 1/4	5 3/8	4 1/2	100,000	5	New York Transit Co.	15c S.A.	Oct. 15, 36	100	4 1/2	†4 1/2	4 1/2	— 3/8
9 3/4	4 7/8	12 3/4	7 1/2	120,000	10	Northern Pipe Line Co.	40c	June 1, 37	.....	.....	.....	.....	.....
110 3/8	104 1/8	111 1/2	106 3/4	562,122	100	Ohio Oil Co. pfd.	$1.50Q	Dec. 15, 36	500	108 3/4	108	108 3/4	+ 1 1/4
8 1/4	5 1/2	8 3/4	5 1/2	394,000	$1	Penn Mex Fuel Co.	50c	Dec. 21, 36	.....	.....	.....	.....	.....
44	32 1/2	48	42	1,142,671	10	South Penn Oil Co.	37 1/2cQ	Mar. 31, 37	500	44 1/8	43 1/4	43 1/4	— 7/8
7 7/8	3 1/4	7 1/4	5	100,000	25	Southern Pipe Line Co.	20c	Mar. 1, 37	.....	.....	.....	.....	.....
60	44	42	30	35,000	10	South West Pa. Pipe Lines	50c	Apr. 1, 37	.....	.....	.....	.....	.....
23 3/8	17 1/8	20 3/4	19	2,604,801	50	S. O. Kentucky	25c	Mar. 15, 37	1,400	19 5/8	19 3/8	19 5/8	— 1/8
14 5/8	11	13 3/4	11	182,803	25	S. O. Nebraska	25c	Mar. 29, 37	.....	.....	.....	.....	.....
40	21 3/4	45	33 1/4	753,740	25	S. O. Ohio	25c	Mar. 15, 37	800	37 1/2	36 1/2	37 1/2	— 1/4
107 1/2	97	105 3/4	102 3/4	120,000	100	do 5% pfd.	$1.50Q	Apr. 15, 37	25	102 3/4	†102 3/4	102 3/4	— 1
13 3/8	5 1/8	17	11	34,158	15	Swan Finch Oil Corp.	.....	.....	200	14	14	14	— 1

*New high. †New low. °Imperial Oil Spec. 37 1/2c June 1, 37. International Pet. Extra 50c June 1, 36.
x Ex dividend.

Oil and Royalty Stocks on New York Curb

1936 High	1936 Low	1937 High	1937 Low	Par Value	Company	Transactions Week Ended June 5, 1937 Sales Shares	High	Low	Last	Week's Change
1 7/8	1/8	2 3/8	1 1/4	N.P.	American Maracaibo	7,500	1 7/8	1 5/8	1 3/4	— 1/8
8 1/4	3 1/4	12 7/8	6 1/4	N.P.	Arkansas Nat. Gas	3,300	7 5/8	7 1/8	7 1/4	— 1/4
8 1/4	3 1/4	13 1/4	6 1/4	N.P.	do A	6,000	8	7 5/8	7 3/4	— 1/4
10 7/8	7 1/8	10 3/4	8 1/4	$10	do pfd.	1,100	9	8 3/4	9	0
7 1/4	6 1/4	8 1/4	6	$1	Ashland Oil & Refg.	1,300	6 3/8	6 1/8	6 1/4	+ 1/8
27 1/4	16 1/2	26 1/4	22 5/8	N.P.	British Amer. Oil coup.	100	22 3/4	22 3/4	22 3/4	0
4 7/8	1 7/8	2 3/4	1 3/4	$1/4	Carib Syndicate	2,500	1 7/8	1 3/4	1 3/4	— 1/8
7 3/8	3	5 3/8	3	N.P.	Cities Service	28,900	3 1/8	3	3 1/8	0
66	41 1/2	60	45 1/2	N.P.	do pfd.	1,400	48	†45 1/2	47 1/2	— 3/4
6 1/2	3 3/4	5 7/8	4 1/2	N.P.	do pfd. B	.....	.....	.....	.....	.....
63	40	58	42	N.P.	do pfd. BB	10	46	46	46	— 1/2
4	5/8	.....	.....	N.P.	Colon Oil Corp.	.....	.....	.....	.....	.....
10 1/2	3/4	10 7/8	6 1/2	$1	Columbia Oil & Gas	4,500	7 3/8	†6 1/2	7 3/8	+ 3/8
3 1/8	2	3 1/8	2 5/8	$10	Consolidated Royalty	400	2 5/8	2 1/2	2 5/8	0
4 1/2	1 1/2	4 5/8	1 3/4	$1	Cosden Oil	2,600	1 5/8	1 1/2	1 1/2	— 1/4
38 1/4	6 1/2	39 7/8	23	$100	do pfd.	300	23 1/2	†23	23	— 1 7/8
2 3/4	1 3/4	2 5/8	1 7/8	N.P.	Crown Central Pet.	3,900	2	1 7/8	2	+ 1/8
2 5/8	3/4	2 5/8	5/8	N.P.	Crystal Oil Refg.	300	1	1	1	— 1/8
.....	.....	9 1/2	4	.....	do pfd.	450	*9 1/2	8 1/2	9 3/8	+ 1/2
18 1/2	9	18 1/2	11 3/4	$5	Darby Petroleum	1,900	12 1/2	†11 3/4	12 1/4	— 3/4
6 3/4	1 7/8	8 1/4	5 1/4	N.P.	Derby Oil & Refg.	1,700	6 7/8	6 1/2	6 1/2	— 3/8
81	25 1/2	88	76	N.P.	do pfd.	.....	.....	.....	.....	.....
59	54	63 1/2	51 5/8	$25	Gulf Oil Corp.	7,000	55 1/4	53 1/8	54	— 2 1/4
6 1/4	2 5/8	4 7/8	2 5/8	N.P.	Indian Ter. Illg. Oil A	100	2 5/8	†2 5/8	2 5/8	0
6 1/2	3	4 7/8	2 3/4	N.P.	do B	.....	.....	.....	.....	.....
5 3/4	2 5/8	8 3/4	5 1/4	$1	Kirby Petroleum	600	7	6 3/4	6 3/4	— 3/8
2	1/2	2 1/8	1/8	$25	Leonard Oil Dev.	2,600	1 1/4	1 1/8	1 1/8	0
17 3/4	7 3/8	28	16 3/8	N.P.	Lion Oil Refg.	12,800	*28	25 1/2	27 3/4	+ 1 5/8
14 1/4	9 7/8	14 1/4	10 3/8	N.P.	Lone Star Gas	2,600	11	10 3/4	10 3/4	— 1/4
22 1/4	12	33 1/2	25	N.P.	Margay Oil Co.	700	30 1/4	28	30 1/4	+ 2 3/4
4 1/8	1 1/2	4 1/4	2	N.P.	Mexico-Ohio Oil	200	2	†2	2	0
4 3/4	1 7/8	1 1/8	2 3/4	$1	Michigan Gas & Oil	500	8 1/4	8 1/8	8 1/8	— 1/4
6 5/8	2 3/4	7	4 1/8	N.P.	Mid. States Pet. A vtc.	300	4 3/4	4 1/2	4 3/4	— 1/8
2 5/8	1/8	2	1	N.P.	do B vtc	400	1 1/8	1	1	0
8 7/8	5	7 7/8	6	$10	Mountain Producers	1,200	6 1/4	6 1/8	6 1/4	0
23	17 3/8	19 1/2	15	N.P.	National Fuel Gas	700	15 5/8	†15	15 5/8	+ 1/2
4 5/8	2 1/8	6 1/8	4 3/4	$5	New Bradford Oil	.....	.....	.....	.....	.....
8 5/8	3 3/8	6 1/8	5	$5	North Central Texas	.....	.....	.....	.....	.....
1/8	1/8	3/4	1/8	$1	North European	1,600	3/8	1/8	1/8	0
17 5/8	12	14 1/2	13	$5	Oil Stocks Ltd. A	.....	.....	.....	.....	.....
10 1/8	3 1/4	9 5/8	5 1/2	$1	Pantepec of Venezuela	16,900	8 3/8	7 7/8	8 1/8	— 3/8
1/8	1/8	1/8	1/8	25c	Producers Corp.	3,900	3/8	3/8	3/8	0
20	3	17 1/2	10	N.P.	Red Bank Oil	500	14	13 1/2	14	+ 3/8
1 1/2	1/8	1 3/4	3/4	N.P.	Reiter-Foster Oil	1,500	1 1/8	7/8	1	— 1/8
2 3/4	1/4	.....	.....	$25	Richfield Oil pfd.	.....	.....	.....	.....	.....
19 1/4	4 1/2	13 3/4	5	$1	Root Petroleum	2,700	6	†5	5 3/4	— 1/4
23	14 1/2	18	12	$20	do conv. pr. pfd.	.....	.....	.....	.....	.....
4 3/4	1 7/8	6 1/2	4	N.P.	Ryan Consolidated	1,600	5 7/8	5 1/8	5 7/8	+ 1/2
11 1/4	6 1/4	11 1/4	8 5/8	N.P.	Southland Royalty	2,100	10 1/2	9 7/8	10	— 1/8
5	2 5/8	4 7/8	3 3/4	$1	Sunray Oil	1,200	4 1/4	4	4	— 1/8
49	45	50	43 1/2	.....	do pfd.	.....	.....	.....	.....	.....
9 3/4	5 3/4	7 5/8	5 3/8	N.P.	Texon Oil & Land	600	6	5 3/4	6	+ 1/4
8	2 3/8	9 1/4	6	.....	Venezuela Mex.	500	6 7/8	6 5/8	6 3/4	— 1/4
3	1 1/4	3 3/4	1 3/4	$1	Venezuela Petroleum	3,400	2	1 7/8	1 7/8	— 1/8
11	5 3/8	12 7/8	8 3/8	$1	Woodley Petroleum	200	8 1/2	8 1/4	8 1/4	— 1/4

*New high. †New low.

New York Bonds

Week Ended June 5, 1937

	High	Low	Last	Change
Atlantic Refg. deb. 5s	100 1/4	100 3/32	100 1/4	+ 1/8
Houston Oil 5 1/2s '40	102 1/2	102	102 3/8	+ 3/8
Pure Oil 4 3/4s '50 x.w.	102 11/32	102 3/32	102 11/32	0
Pure Oil 4 1/4s '50 w.w.	114 1/4	111 3/4	113 5/8	—1 5/8
Richfield Oil of Calif. 6s ctfs	45	45	45	+2
Shell Union Oil 3 1/2s '51	99 1/4	98 1/2	99 1/4	+ 3/4
Skelly Oil 4s '51	100	99 1/8	100	+ 3/4
Socony-Vacuum 3 1/2s '50	105	103 1/2	104 3/4	+ 3/4
S. O. N. J. 3s '61	98	97 1/2	97 7/8	0
Union Oil of Calif 3 1/2s '52	111	110 1/8	110 1/8	— 5/8
do 6s A	117 1/2	117 1/8	117 1/4	+ 3/8
Warner-Quinlan 6s	48 7/8	46 3/4	48 1/2	+ 1/2

New York Curb Bonds

Week Ending June 5

	High	Low	Last	Change
Cities Serv. 5s '66	71 1/4	70 3/4	71 1/4	+ 3/4
Cities Serv. 5s '50	70 1/8	69	70	+ 1/8
Cities Serv. G. 5 1/2s '42	101 3/8	100 1/2	101 1/4	+ 1/4
Empire O & R 5 1/2s '42	87 1/8	83	85 5/8	—2 3/8

Cleveland Stock Exc.

Transactions Week Ended June 5, 1937

	Sales	High	Low	Last	Change Over Week
Canfield Oil	12	99	99	99	0
do pfd.	.....	.....	.....	.....	.....
Nat'l Refining	85	8 1/2	8 1/2	8 1/2	+ 1/2
do pfd.	.....	.....	.....	.....	.....

Oil Dividends

Dividends Waiting Payment

Company	Amount	Record	Payable
Ashland Oil & Refg. q	10c	June 21	June 30
Ashland Oil & Refg. 5% pfd. q	$1.25	June 14	June 15
Atlantic Refg. q	25c	May 21	June 15
Buckeye Pipe Line	$1.00	May 28	June 15
Chesebrough Mfg. E	50c	June 4	June 28
Chesebrough Mfg. q	$1.00	June 4	June 28
Continental Oil Sp.	25c	June 9	June 30
Continental Oil	25c	June 9	June 30
Creole Petr. E	25c	May 27	June 10
Creole Petr.	25c	May 27	June 10
Darby Petr. S.	25c	July 2	July 15
Eason Oil pfd. q	37 1/2c	June 19	July 1
Gulf Oil Corp.	25c	June 15	July 1
Humble Oil & Refg. q	37 1/2c	June 1	July 1
Midland Oil Corp. $2 cv. pfd.	25c	June 10	June 18
Mountain Prod.	30c	May 15	June 15
National Transit	45c	May 29	June 15
North Cent. Texas Oil	15c	June 10	July 3
Ohio Oil	50c	May 14	June 15
Ohio Oil pfd. q	$1.50	June 1	June 15
Plymouth Oil	35c	June 2	June 30
Pure Oil Co. 8% pfd. q	$2.00	June 10	July 1
Pure Oil 6% pfd. q	$1.50	June 10	July 1
Pure Oil Co. 5 1/4% pfd. q	$1.25	June 10	July 1
Quaker State Oil Refg.	25c	May 29	June 15
Seaboard Oil of Del. q	25c	June 1	June 15
Shell Union Oil pfd. q	$1.37 1/2	June 15	July 1
Skelly Oil R	50c	June 1	July 1
South Penn Oil E	37 1/2c	June 15	June 30
South Penn Oil q	37 1/2c	June 15	June 30
South West Pa. Pipelines	50c	June 15	July 1
Southland Royalty	10c	June 5	June 21
Stand. Oil of Ind. E	15c	May 15	June 15
Stand. Oil of Ind. q	25c	May 15	June 15
Stand. Oil of Ky. E	15c	May 28	June 15
Stand. Oil of Ky. q	25c	May 28	June 15
Stand. of N. J. E	75c	May 17	June 15
Stand. of N. J. S	50c	May 17	June 15
Sun Oil q	25c	May 25	June 15
Sunray Oil Corp. pfd. q	68 3/4c	June 7	July 1
Texas Corp. q	50c	June 11	July 1
Tide Water Asso. Oil $4.50 pfd. q	$1.12 1/2	June 10	July 1

E extra; R resumed; S semi-annual; sp special.

Pittsburgh Stock Exc.

Transactions Week Ended June 4, 1937

	Sales	High	Low	Last	Change Over Week
†Cities Serv.	208	2 3/4	2 3/4	2 3/4	— 5/8
Col. Gas & Elec.	344	12	11 1/2	11 1/2	— 5/8
†Col. Oil & Gaso.	200	7 1/8	7	7	0
Lone Star Gas	2,341	10 7/8	10 3/4	10 7/8	— 1/4
Mountain Fuel Supply	1,406	8 3/4	8 1/4	8 3/8	— 3/8
Pgh. Oil & Gas	1,306	2	2	2	0
xPlymouth Oil	120	27 1/8	26	27 1/8	0
Shamrock Oil & Gas	3,659	7 1/4	6 3/4	7 1/8	0
do Rights	5,288	.14	.14	.14	0
†Stand. Oil of N. J.	153	67	65 7/8	67	— 1/4

†Unlisted. xEx dividend.

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Fuel Oil

(*Continued from page* 63)

board terminal points by the larger companies were at 5.25 to 5.4 cents on Nos. 2, 3 and 4 oils for prompt, with top prices for next winter 1 cent higher. Some suppliers did not immediately advance their prices to those levels and oil still was available for shipment at around 0.25 cent under above postings.

* * *

TULSA, June 7.—Increased inquiry for light fuels was reported by most Mid-Continent refiners the first week of June. Lighter grades, suitable for tractor fuel, especially were active. Heavier grades of so-called "heating oil" either were going to storage or were being used for cracking stock. Prices were steady, with some refiners quoting higher for full specification No. 1 p.w. oil.

Heavy industrial fuels were somewhat unsettled as strikes in the industrial sections reduced demand for these grades. Railroads still were ordering out large quantities of heavy oil, however.

Dividends Higher

NEW YORK, June 7.—Cash dividend payments of the Standard Oil group, for the second quarter of 1937, were estimated at $94,966,501, compared to $74,817,051 in the similar period in 1936, in the monthly oil review of Carl H. Pforzheimer & Co.

Cash payments for the first half of 1937 will total approximately $120,404,209 as against $94,689,139 in first half of 1936, the report shows. The increase in the second quarter of 1937 was largely accounted for by increased disbursements by the Standards of California and New Jersey, Ohio Oil Co., Humble Oil & Refining Co. and Creole Petroleum Corp.

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Penna. Crude Up 15c

PITTSBURGH, June 7.—Effective June 7, Joseph Seep Purchasing Agency advanced all Pennsylvania grade crude 15 cents, to these new prices: In Southwest Pennsylvania lines, $2.57; in Eureka lines (West Virginia grade), $2.52; in Buckeye lines (Macksburg, O., district), $2.37. Corning was unchanged.

Effective the same date, Tide Water Pipe Co., Ltd., increased Bradford-Allegheny district crude 15 cents, to new price of $2.82, and The Pennzoil Co. increased its prices for lower district Pennsylvania grade crude in National Transit Lines 15 cents. The latter's new price is $2.82 in Franklin, Doolittle, Cochran and Hamilton, and for other lower district crudes, ranges down to $2.77 per barrel.

Last previous change on Pennsylvania grade by all above companies was a 10 cent advance Feb. 24.

Coming Meetings

General Expositions

The Greater Texas and Pan American Exposition, Dallas, June 12 to Oct. 31.
The Great Lakes Exposition, Lake Front, Cleveland, Ohio, May 29 to Sept. 6.

Oil Meetings

Second World Petroleum Congress, during International Exposition, Paris, France, June 14 to 19.
National Petroleum Assn., Fire and Safety Marshals, Y. M. C. A., Bradford, Pa., June 16, 17.
Oil & Gas Golden Celebration, Findlay, Ohio, June 20 to 26.
National Oil Scouts Association, Dallas, Texas, June 24 to 26.
American Society for Testing Materials, 40th annual meeting, and 4th exhibit of testing apparatus, and related equipment. The Waldorf-Astoria, New York City, June 28 to July 2.
Interstate Oil Compact Commission meeting, Santa Fe, New Mexico, July 12 and 13.
Third Michigan Oil and Gas Exposition, Exposition Park, Mt. Pleasant, Mich., Aug. 10 to 15.
American Chemical Society, Rochester, N. Y., Sept. 6 to 10.
Kentucky Petroleum Marketers Association, Annual Fall Conference and Golf Tournament, Louisville, Sept. 7 and 8.
National Petroleum Association, annual meeting, Hotel Traymore, Atlantic City, N. J., Sept. 15, 16 and 17.
National Association of Petroleum Retailers, fifth national convention, Rochester, N. Y., Sept. 27 to Oct. 1.
American Gas Association, 19th annual convention, Cleveland, Ohio, Sept. 27 to Oct. 1.
Ohio Petroleum Marketers Association, fall conference, Hotel Carter, and golf tournament, Westwood Country Club, Cleveland, Sept. 29 and 30.
Society of Automotive Engineers, Fuel and Lubricants Regional meeting, Tulsa, Okla., Sept. 30 and Oct. 1.
Society of Automotive Engineers, National Aircraft Production meeting, Ambassador Hotel, Los Angeles, Calif., Oct. 7, 8 and 9.
26th National Safety Congress and Exposition, Kansas City, Mo., Oct. 11 to 15.
Oil-World Exposition, Inc., Houston, Texas, Oct. 11 to 16.
25th Annual Conference on Taxation, auspices New England State Tax Officials Association, Hanover, N. H., Oct. 14 and 15.
Independent Petroleum Association of America, Houston, Texas, Oct. 14, 15 and 16.
American Association of Petroleum Geologists, mid-year meeting, William Penn Hotel, Pittsburgh, Pa., Oct. 14, 15 and 16.
National Tax Association, 30th annual conference, The Lord Baltimore Hotel, Baltimore, Md., Oct. 25 to 28.
Oil Trades Association of New York, New York, Oct. 26.
Society of Automotive Engineers, annual dinner, Commodore Hotel, New York City, Oct. 28.
Mid-Continent Oil & Gas Association of Texas, annual meeting and convention, Dallas, Texas, Oct. 29 and 30.
National Automobile Show, Grand Central Palace, New York City, Oct. 27 to Nov. 3.
American Petroleum Institute, 18th annual meeting, Stevens Hotel, Chicago, Ill., Nov. 9 to 12.
National Asphalt Conference, Memphis, Tenn., week of Dec. 6.
Exposition of Chemical Industries, Grand Central Palace, New York, N. Y., Dec. 6 to 11.
Society of Automotive Engineers, National Production meeting, Flint, Mich., Dec. 8, 9 and 10.

ADVERTISING PAGES REMOVED

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D. E. BUCHANAN

D. E. Buchanan, president of Hanlon-Buchanan, Inc., Tulsa, a pioneer in the natural gasoline industry in this country, who also aided materially in the development of a market in Europe for this oil product, holds two honorary positions in connection with the Second World Petroleum Congress, in session in Paris, June 14 to 19.

He was named by Secretary of State Hull as chairman of the official delegation to the Congress representing the U. S., and he is also chairman of the delegation representing the American Petroleum Institute. Mr. Buchanan is also to present a paper at the Congress on, "Natural Gasoline in the World Motor Fuel Market." His paper is published in this issue.